TIMESPACE®

X300

Instruction Manual

Designed and Manufactured in the UK

The latest version of the X300 Manual is available online; www.tspace.co.uk

X200 Operating Software V2.0.1
X300 Operating Software V1.3.2
V400 Operating Software V1.2.3
PCLink Suite V7.5
- PCLink200 V1.8.2
- PCPlayer V1.8.2
- RemoteLink V1.8.2
- X-Communicate V1.8.2

Kstation V1.0.0.4
SafetyLink V1.0
ImageLink V1.0
LANLink V4.0

© 30th April 2015

Timespace Technology Ltd Blackstone Road Huntingdon Cambridgeshire PE29 6TT UK
t: +44 (0)1480 414147 f: +44 (0)1480 414146 e: mail@tspace.co.uk www.tspace.co.uk

Contents

SAFETY 5
ENVIRONMENTAL 5
SHOCK AND VIBRATION 5
EMC 5
CONFORMITY 5
RECYCLING 5
EC DECLARATION OF CONFORMITY 6
E11 TYPE APPROVAL 7
SYSTEM OVERVIEW 10
X300 Front Panel 11
SD Card Compatibility 11
X300 Rear panel, common connections 13
X300-4 Rear Panel 15
X300-16 Rear Panel 16
X300 DIGITAL RECORDER 18
INSTALLATION 19
T408 VEHICLE KIT 20
SERVICE AND FAIL LED 25
PROGRAMMING 26
HELP SCREENS 26
SOFTWARE UPDATES 26
SOFTWARE UPDATES - PCLink 27
LANGUAGE SELECTION 28
VIDEO STANDARD - PAL / NTSC 28
FILE SYSTEM 28
VIDEO COMPRESSION 29
AUDIO 30
PC ACCESS PRECAUTIONS 31
PC NETWORK ACCESS 31
WATERMARK 32
SEQUENCING 32
WATERMARK FILE 32
GPS 33
REMOTE OPERATION (GSM / LAN / Wifi / 3G) 34
RS232 EXTERNAL CONTROL 36
X300 MENU SYSTEM 42
MAIN MENU 43
NORMAL RECORDING 44

ALARM RECORDING 46
ALARM INPUTS 47
ALARM OUTPUT 48
ALARM CYCLER 49
SD CARD 50
SD CARD RECORDING 51
SD CARD FILE COPY 52
SHOT RECORDING 53
MOTION DETECTION 54
PRE-MOTION RATE RECORDING 55
AUDIO RECORDING 55
RECORDED FILES 57
VIDEO OUTPUT 58
MAIN VIDEO SWITCHER 58
AUX VIDEO SWITCHER 59
TIME AND DATE 60
CAMERA SETTINGS 61
FILE SYSTEM 62
SYSTEM INFO 63
PASSWORD 64
POWER OPTIONS 65
RESET 66
EXTERNAL EQUIPMENT 67
LAN 68
GPS 69
GSENSOR 70
GSM / REMOTE 71
SMS MESSAGES 72
HEALTH OVER SMS 73
IMAGES OVER SMS 74
PTZ 75
SMTP EMAIL 76
WEB SERVER 77
ADVANCED 78
LOAD SYSTEM UPGRADE 80
TIMESPACE REVIEWER 81
FUNCTION 81
MENU NAVIGATION CONTROLS 82
PLAYBACK & RECORDING 83

CAMERA SWITCHER 84
PTZ CONTROLS 85
SETTING PTZ PRESETS 85
PTZ MODES 86
USB INTERFACE KIT 87
PCLINK SUITE 88
WARNINGS 89
APPEXDIX 1 – Health SMS Message Format 90
APPEXDIX 2 – Splash Screen 93
APPEXDIX 3 – Transport for London IBUS diagnostic interface 94

SAFETY

The X300 is designed to be powered from an external power source which complies with the Low Voltage Directive (73/23/EEC).

The X300 is designed for indoor use in the temperature range 0° to 50°C, 20% to 80% RH (non-condensing).

ENVIRONMENTAL

The X300 may be operated in ambient temperatures from 5°C to 40°C. This specification applies in still air, with the X300 mounted horizontally and ambient temperature measured 15cms above the centre of X300.

If the X300 is to be mounted in an enclosure is important that the internal temperature inside the enclosure does not exceed the specification above and any new enclosure design should be tested.

SHOCK AND VIBRATION

Due to the nature of hard disk drives it is essential that the X300 is isolated from vibration and shock as much as possible. Consideration should be paid to the mounting position so that the levels of shock and vibration that may be encountered are minimized.

In situations where some exposure to shock and vibration are unavoidable it is strongly advised that the T406 Anti-Vibration System is used. This system is specifically designed to isolate the X300 from shock and vibration. Further details and fitting instructions can be found in the Anti-Vibration Kit section of this manual.

EMC

The X300 complies with the relevant EEC, Automotive 'E' Mark and EMC standards for this type of product.

CONFORMITY

EMC Conformity (CE Mark); Meets the European Council Directive 89/336/EEC (EMC Directive) relating to EMC Emissions - EN61000-6-3(2001) and EMC Immunity – EN61000-6-1(2001).

EMC Conformity (E Mark); Meets the Type Approval requirements of European Commission Directive 95/54/EC.

CFR47:2009 Class A, Part 15 - Radiated Emissions and Conducted Emissions.

RECYCLING

When the product has reached its end of life and requires disposal, recycling instructions are available upon request.

EC DECLARATION OF CONFORMITY

EC Declaration of Conformity (CE)

We Timespace Technology Ltd
Blackstone Road
Huntingdon
PE29 6TT
United Kingdom

declare that the

X300 Digital Video Recorder

Meets the intent of the European Council Directive 89/336/EEC referred to as the Electromagnetic Compatibility (EMC) Directive. The product conforms to the following standards which have been listed in the Official Journal of the European Union.

EMC

Emissions - EN55022:2006 + A1
Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement.

Conducted - EN55024:1998 +A1 +A2
Information technology equipment – Immunity characteristics – Limits and methods of measurement.

……
Dr ROBERT HEYLEN
TECHNICAL DIRECTOR
1st December 2010

VCA Headquarters

1 The Eastgate Office Centre
Eastgate Road Bristol, BS5
6XX United Kingdom

Switchboard: +44 (0) 117 951 5151
Main Fax: +44 (0) 117 952 4103
Email: enquiries@vca.gov.uk Web:
www.vca.gov.uk

THE UNITED KINGDOM VEHICLE APPROVAL AUTHORITY

COMMUNICATION CONCERNING THE TYPE-APPROVAL ([1]), ~~EXTENSION OF TYPE-APPROVAL ([1]), REFUSAL OF TYPE-APPROVAL([1]), WITHDRAWAL OF TYPEAPPROVAL ([1])~~, OF A TYPE OF COMPONENT~~/SEPARATE TECHNICAL UNIT~~([1]) WITH REGARD TO RADIO INTERFERENCE SUPPRESSION DIRECTIVE 72/245/EC, AS LAST AMENDED BY DIRECTIVE 2009/19/EC.

Type Approval No: e11*72/245*2009/19*5917*00

Reason for Extension: Not applicable EC type-approval

mark to be affixed on ESA: e11 03 5917

SECTION I

0.1. Make (trade name of manufacturer): Timespace Technology Limited

0.2. Type and general commercial description(s): X300 Digital Video Recorder

0.3. Means of identification of type, if marked on the vehicle/component/separate technical unit (1) (2): Self adhesive label containing the part number

0.3.1. Location of that marking: Top left of the digital video recorder

0.5. Name and address of manufacturer:

Timespace Technology Limited
Blackstone Road
Huntingdon
Cambridgeshire
PE29 6TT
United Kingdom

Name and address of authorised representative, if any; Not applicable

01-Jul-11
UK Approval Authority

0.7. In the case of components and separate technical units, location and method of affixing of the EEC approval-mark: Self adhesive label on the bottom of the digital video recorder

0.8. Address(es) of assembly plant(s): As 0.5 above

SECTION II

1. Additional information (where applicable): See Appendix

2. Technical service responsible for carrying out the tests: MIRA, Nuneaton

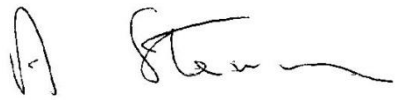
3. Date of test report: 22 June 2011

4. Number of test report: 1029232#03

5. Remarks (if any): See Appendix

6. Place: BRISTOL

7. Date: 10 JULY 2011

8. Signature:  A. W. STENNING Head of Technical and Quality Group

9. The type approval file deposited at the Administrative Service having delivered the type approval may be obtained on request

(1) Delete where not applicable.

(2) If the means of identification of type contains characters not relevant to describe the vehicle, component or separate technical unit types covered by this type-approval certificate such characters shall be represented in the documentation by the symbol '?'(e.g. ABC??123??).

(3) As defined in Annex IIA to Directive 70/156/EEC.

VCA 01-Jul-11 UK Approval Authority

APPENDIX

of EC Type Approval Certificate No: e11*72/245*2009/19*5917*00 concerning the type approval of an electric/electronic subassembly with regard to Directive 72/245/EEC as last amended by Directive 2009/19/EC

1. Additional information:

1.1. Electrical system rated voltage: 12 V dc

1.2. This ESA can be used on any vehicle type with the following restrictions: Negative earth vehicles only

1.2.1. Installation conditions, if any: Manufacturer's instructions to be followed

1.3. This ESA can only be used on the following vehicle types: Not applicable

1.3.1. Installation conditions, if any: Not applicable

1.4. The specific test method(s) used and the frequency ranges covered to determine immunity were: (please specify precise method used from Annex IX): Not applicable

1.5. Laboratory accredited to ISO 17025 and recognised by the Approval Authority (for the purpose of this Directive) responsible for carrying out the test. MIRA, Nuneaton, United Kingdom

5. Remarks: None

SYSTEM OVERVIEW

X300 DIGITAL VIDEO/AUDIO RECORDING SYSTEM

X300 DIGITAL VIDEO / AUDIO RECORDER

REMOVABLE HARD DISK CARTRIDGE

REMOVABLE SD CARD FOR DUAL RECORDING & DOWNLOAD (OPTIONAL)

TIMESPACE REVIEWER / PROGRAMMER

The X300 is a digital video/audio surveillance recorder for use in covert, portable and mobile applications.

Recordings are made on a removable hard disk cartridge inserted in the X300. Optionally recordings can be written to a removable SD card.

The recordings can be accessed by connecting the cartridge to a PC using the USB interface kit. Timespace PCLink200 application is a proprietary reading and archiving software package.

The Timespace Reviewer is used to program the menu settings on X300, to check camera views and to review recordings on the installed X300 Hard Disk Cartridge. Recording can continue during this reviewing process.

X300 Front Panel

RECORD BUTTON
Turns configured recording mode on and off. Button can be disabled within menu settings.

LED's

Pwr	- Illuminated when the X300 is powered (Green LED).
Record	- Illuminated Red when the X300 is recording (flashing when in Motion Detect mode).
Disk	- Pulses Green/Red when the X300 is reading/writing to/from the Cartridge or SD card.
SD	- Pulses Orange when the X300 is reading/writing to/from the SD card.
Fail	- Illuminated Red when any of the Fail conditions are met (refer to Service / Fail page).
Service	- Illuminated Orange when any of the Service conditions are met (refer to Service / Fail page)

At Power On - All LED's will illuminate whilst the X300 initialises and will remain lit during system check (menu disabled) until the unit is operational. Once operational only the Pwr LED will remain illuminated unless recording is taking place.

CARTRIDGE LOCK

Locked	- Securely locks the removable cartridge in place and enables it for use.
Unlocked	- Turns off the cartridge, releasing it for removal.

SD CARD
The X300 supports a single SD card for two configurable functions:

Dual Recording - The X300 menu settings can be configured to record up to 25 images per second to the SD card in addition to primary images per second being recorded to the cartridge. All additional data for example audio and gps are also included within the SD recorded files.

File Download - Files that are recorded on the X300 Cartridge can be selected and copied to the SD card for review on a PC.

SD Card Compatibility The X300 supports **SanDisk SDHC Ultra** or **Extreme** cards **only**. Sizes include 4GB, 8GB, 16GB and 32GB. Both 15 and 30MB/s SD cards are compatible however for best Audio playback results, 30MB/s is recommended.

TIMESPACE REVIEWER CONNECTOR

Connect the Timespace reviewer to X300 Reviewer socket using a standard RJ45 Ethernet cable.

Signals for this connector are as follows:

1 Video out
2 Video ground
3 Audio ground
4 RS232 Rx
5 RS232 Tx
6 Audio out (line level)
7 Power ground
8 12V

The 12V is supplied to the Reviewer from the X300. **NB** using greater than 12V may damage both the X300 and the Reviewer. **Never** connect a laptop or PC to the front panel Reviewer socket, this will damage the laptop/PC.

X300 Rear panel, common connections

RS232 CONNECTOR
9 way male D-type connector (DB9) which can be used to support 1 or 2 RS232 peripherals.

PIN	TYPE	I/O	TYPE
3	TD, Transmit Data	>	Serial Data
2	RD, Receive Data	<	Serial Data
7	RTS, Request to send	>	Handshaking
8	CTS, Clear to send	<	Handshaking
4	DTR, Data terminal ready	>	X300 outputs 5V
6	DSR, Data set ready	<	Ignored by X300
1	DCD, Data carrier detect	<	Detect modem status
9	RI, Ring Indicator	<	Ignored by X300
5	GND, Ground		

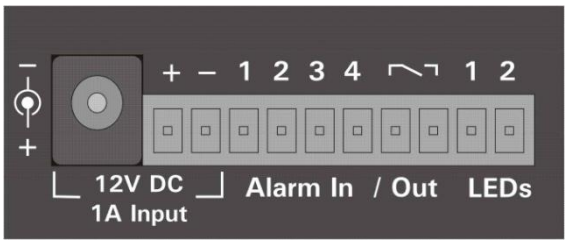
> X300 output
< X300 input

Using a conventional cable (DB9 male to DB9 female straight through (1-1, 2-2, 3-3 etc.)) the X300 can be connected to a modem. Alternatively, two RS232 peripherals such as GSM modem and GPS device can be connected simultaneously. Here is an example of the wiring;

PIN	TYPE	I/O	TYPE
Device 1 (Modem)			
3	TD, Transmit Data	>	Serial Data
2	RD, Receive Data	<	Serial Data
7	RTS, Request to send	>	Handshaking
8	CTS, Clear to send	<	Handshaking
1	DCD, Data carrier detect	<	Detect modem status
5	GND, Ground		
Device 2 (GPS)			
4	5V, Supply (500mA max)	>	Power
9	RD, Receive Data	<	Serial Data
5	GND, Ground		

> X300 output
< X300 input

INPUT/OUTPUT CONNECTOR
10 way screw terminal block.

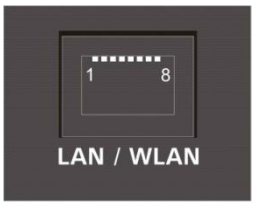


The X300 requires 12V regulated power. This can be applied to either via 12V DC jack socket or 12V screw terminals. **NB:** Do not use both power inputs simultaneously.

Connect alarm inputs 1, 2, 3 and 4 to - terminal if closed or for open circuit leave open.
Connect alarm output to Out terminal pair.
Connect LED 1 between + and terminal LED 1, including a series resistor to limit current.

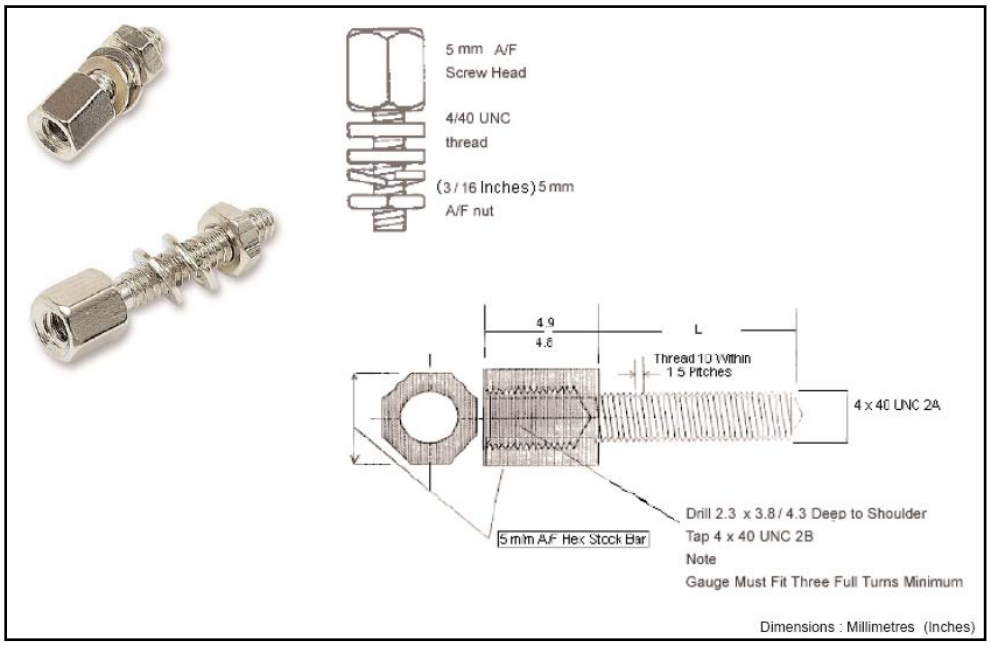
Connect LED 2 between + and terminal LED 2, including a series resistor to limit current.
Terminals LED 1 and LED 2 are high impedance (LAMP/LED off) or 0V (LAMP/LED on)
LED outputs 1 and 2 can be menu assigned to duplicate any of the 4 front panel LEDs (power, record, service and fail).

ETHERNET CONNECTOR
Connect via a standard RJ45 Ethernet cable (straight i.e. pins 1-1, 2-2, 3-3 etc.) to Ethernet hub, switch, router, wireless LAN adaptor or 3G modem.



Internal Connections: 1 Tx+, 2Tx-, 3 Rx+, 4 NC, 5 NC, 6 Rx-, 7 NC, 8 NC

The RS232 and 25 way D-type connectors use a 4-40 UNC Thread type Jack Posts. Farnell PN: 1099010:

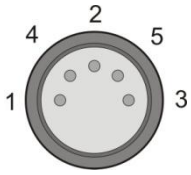


X300-4 Rear Panel

Power, I/O, RS232 and LAN connections are described under *Rear panel Common connections*.

VIDEO CONNECTORS
1 BNC video output
4 BNC video inputs

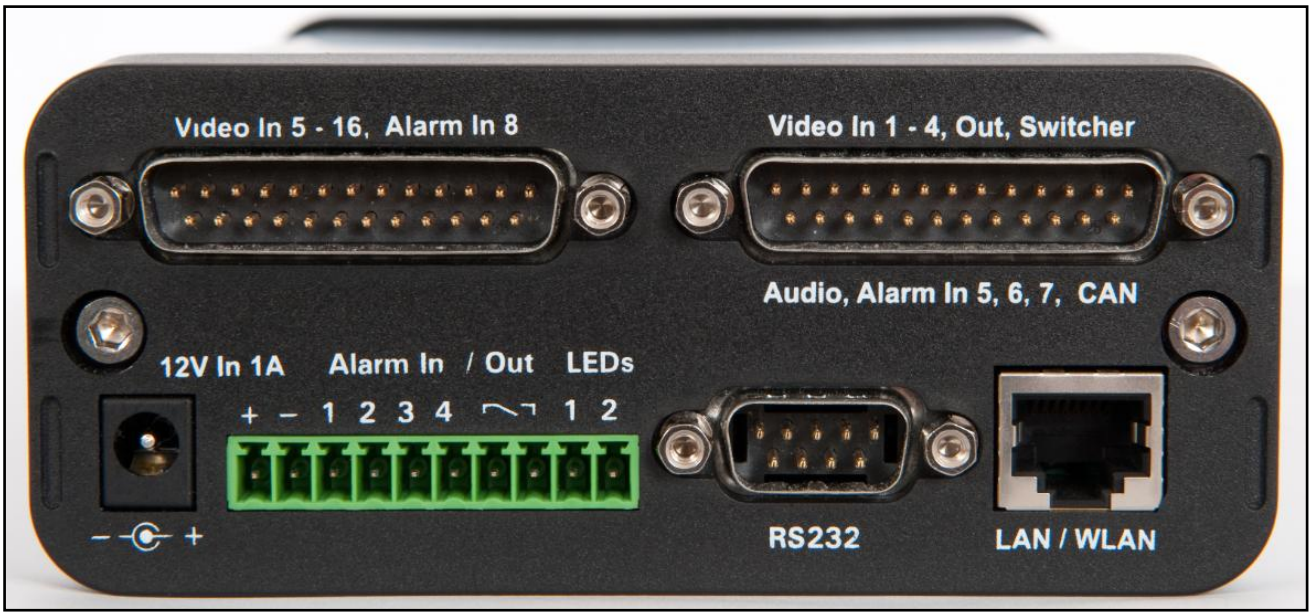
AUDIO CONNECTOR
5 pin 180° female DIN connector (DIN 41524)



Pin	
1	Audio input 1 (left)
4	Audio input 2 (right)
2	Audio GND
5	Audio output 2 (right)
3	Audio output 1 (left)

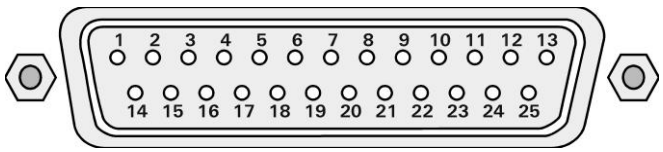
The audio signals are at line level. A 5 pin DIN to 4 way RCA phono harness can be readily purchased from a number of suppliers. A locking connector could be used to secure the DIN in place.

X300-16 Rear Panel



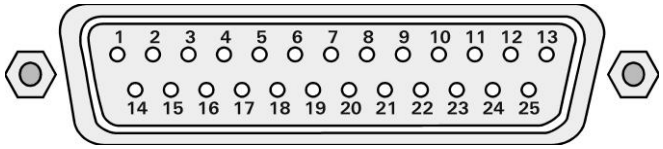
Power, I/O, RS232 and LAN connections are described under *Rear panel Common connections*.

Pin numbering of both 25 Way Male D type connectors on X300 (looking at rear panel).



Video 5 - 16, Alarm In 8 Connector

Pin		Pin	
1	Video GND In 5	14	Video In 5
2	Video GND In 6	15	Video In 6
3	Video GND In 7	16	Video In 7
4	Video GND In 8	17	Video In 8
5	Video GND In 9	18	Video In 9
6	Video GND In 10	19	Video In 10
7	Video GND In 11	20	Video In 11
8	Video GND In 12	21	Video In 12
9	Video GND In 13	22	Video In 13
10	Video GND In 14	23	Video In 14
11	Video GND In 15	24	Video In 15
12	Video GND In 16	25	Video In 16
13	Alarm In 8		



Video 1 - 4, Out, Switcher, Audio, Alarm In 5, 6, 7, CAN Connector

Pin		Pin	
1	Video GND In 1	14	Video In 1
2	Video GND In 2	15	Video In 2
3	Video GND In 3	16	Video In 3
4	Video GND In 4	17	Video In 4
5	Video GND Main Out	18	Video Main Out
6	Video GND Switcher Out	19	Video Switcher Out
7	Audio GND Out 2 (right)	20	Audio Out 2 (right)
8	Audio GND Out 1 (left)	21	Audio Out 1 (left)
9	Audio GND In 1 (left)	22	Audio In 1 (left)
10	Audio GND In 2 (right)	23	Audio In 2 (right)
11	Alarm In 5	24	Alarm In 6
12	CAN L	25	CAN H
13	Alarm In 7		

X300-16 Cable Harness Recommended Specification; A common cable harness can be used for both 25 Way D type connections on the X300-16

Connector	25 Way Female D type
Shell	Recommended max overall width 56mm (the two 25 way connectors are 57mm apart)
Cables	12 individual RG179 cables of suitable length.

Connections	Shield pin	Core Pin
Cable 1	1	14
Cable 2	2	15
Cable 3	3	16
...		
Cable 12	12	25

Pin 13 not connected.

In order to meet the EMC standards with which the X300 is compliant it is important that shielded cables are exclusively used. All of the signal grounds should be common inside the D-Type connector and connected to a metal back-shell in order that the cable run and D-Type connector are shielded.

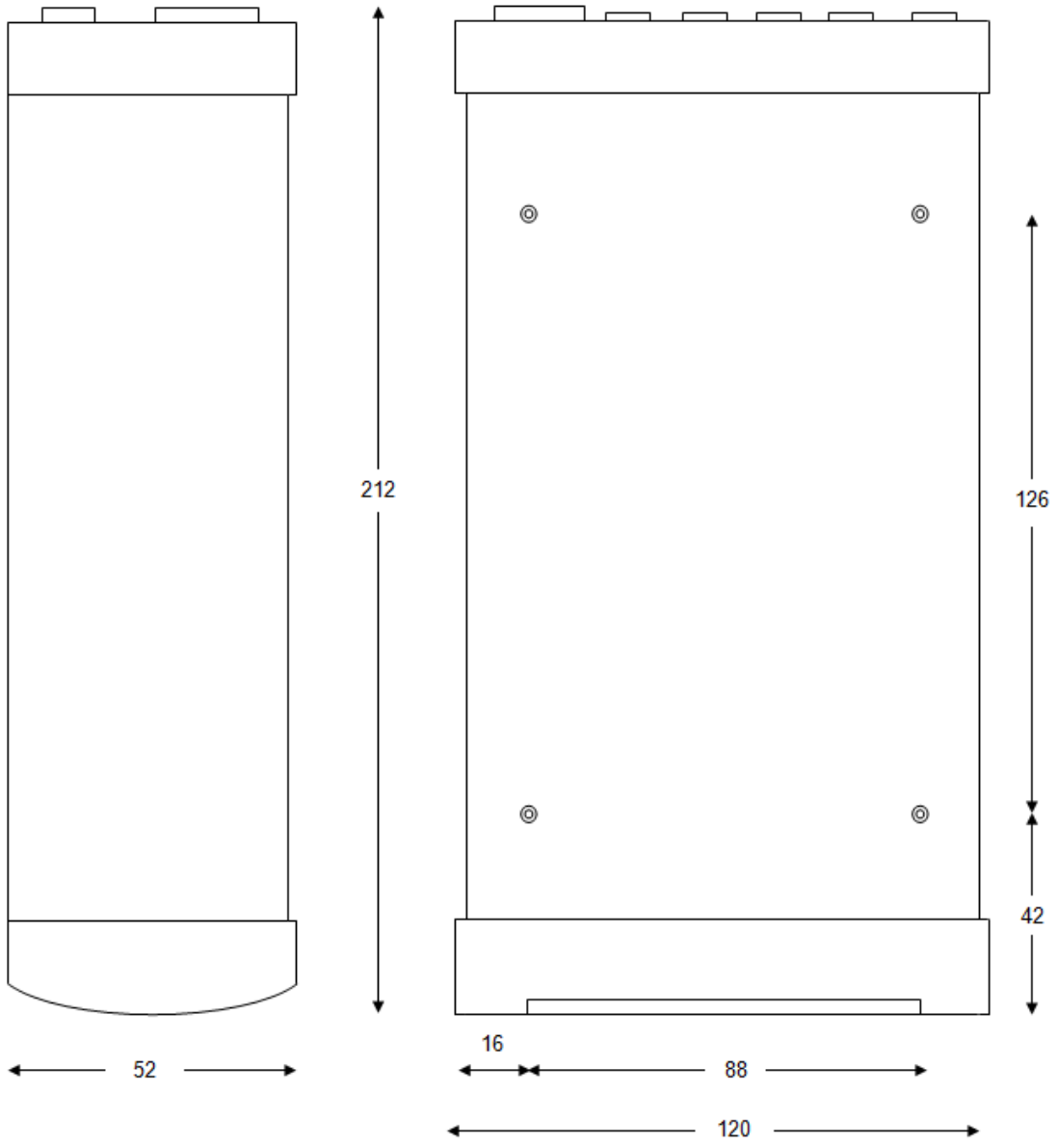
X300 DIGITAL RECORDER

INSTALLATION

The X300 can be used free-standing or it can be mounted using the 4 x threaded holes on the underside - mounting screw size M4, 0.7 Pitch, 12mm).

The X300 requires 12V regulated power. This can be applied to either via 12V DC jack socket or 12V screw terminals. **NB:** Do not use both power inputs simultaneously. Cameras and other external equipment should be connected / wired to the X300 before power is applied.

Mechanical Data / fixing specification (measurements shown in mm);



T408 VEHICLE KIT

The following instructions are based on the Timespace X200 DVR, therefore some measurements will vary slightly from the X300 – see INSTALLATION page of this manual for exact X300 mechanical data.

For use in mobile installations subject to shock and vibration. Please adhere to the following instructions for the installation of the Vehicle Kit. Failure to do so may result in the Mounting System not working correctly.

Inventory of Parts

The Vehicle Kit consists of the following parts;

QTY	Description
4	Wire Rope Mounts
1	Stabiliser Coupling
8	M4 x 12mm Counter-Sunk Hex-Head Screws

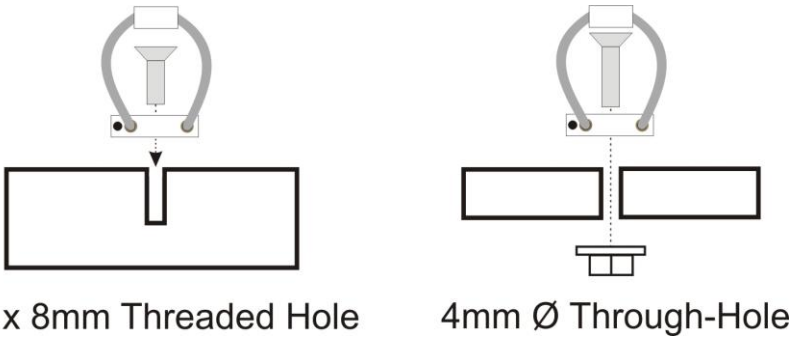
In addition you will require a standard 'L' shaped hex key. This is essential, as when all of the other screws have been tightened, there is no room for any other tool to tighten the front lower pair of screws.

Mounting Hole Preparation

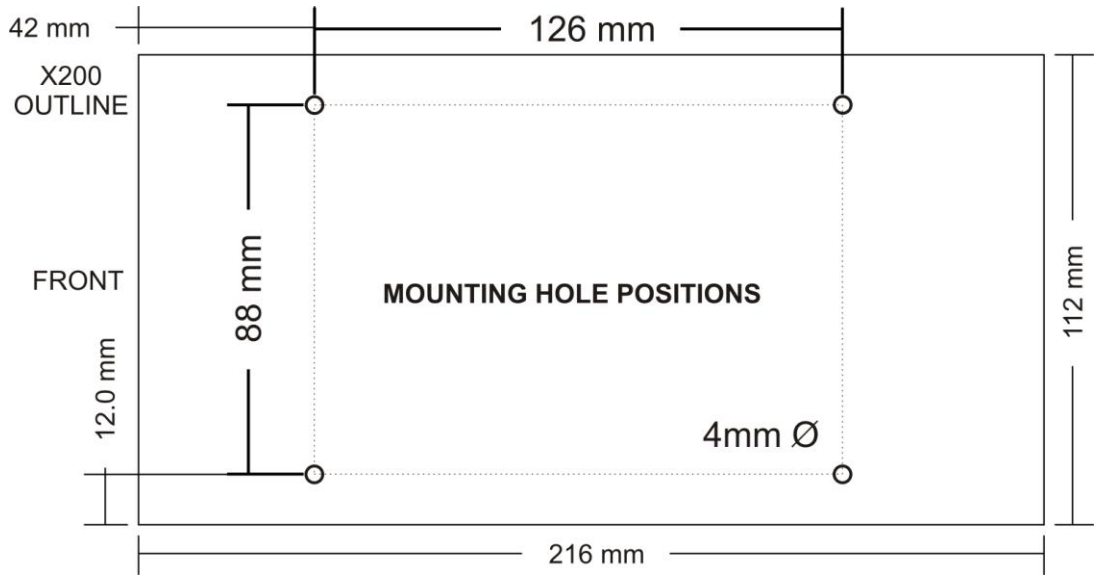
Drill four mounting holes to attach the Wire Rope Mounts. If you intend to use the M4 x 12mm screws into blind holes, then the holes will have to be drilled and tapped to accept an M4 screw, with a thread depth of no less than 8mm.

If mounting the Wire Rope Mounts through a metal plate, then longer screws may have to be used in order to allow a washer and nut to be attached on the other side of the plate. The length of these screws will have to be chosen depending on the thickness of the plate and the height of the washer and nut.

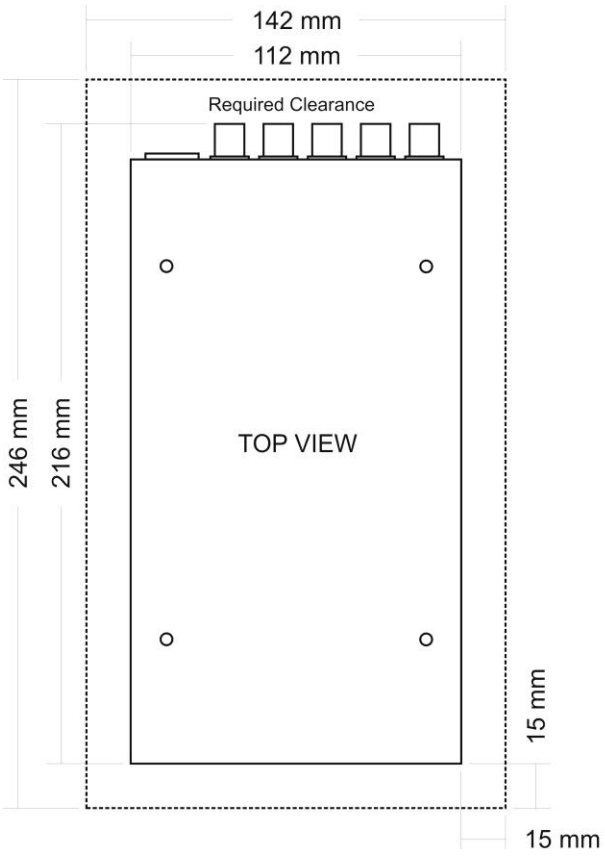
Please note that any screw used for mounting the wire rope mounts to an enclosure surface must have an M4 thread and have a counter-sunk hex-head.

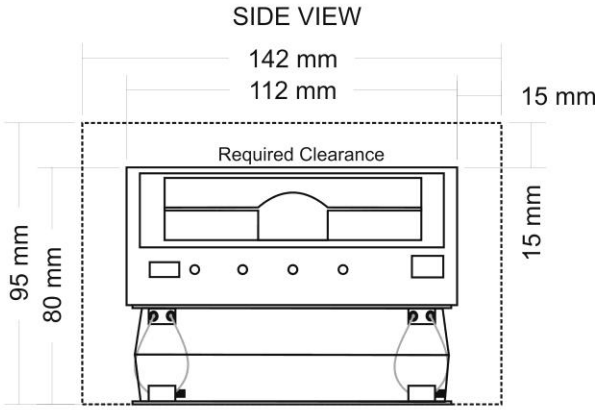


Mounting Hole Location
The mounting holes must be drilled on 126mm and 88mm centres.



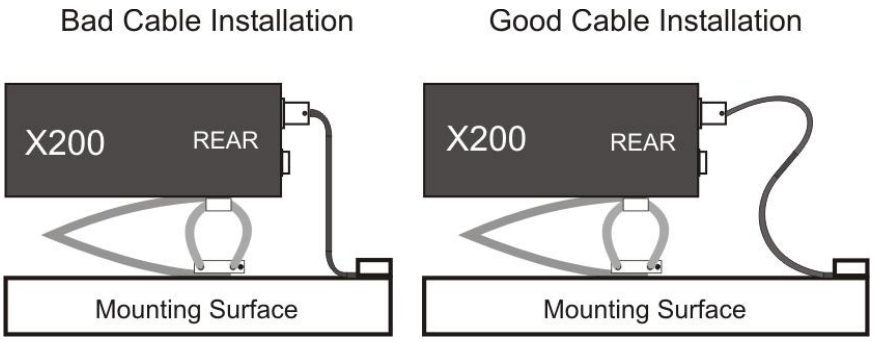
Total Mounting Volume Required
It is necessary to allow a minimum clearance of at least 15mm around the body of the X200 when mounted on the T408 Vehicle Kit. This is to allow free movement of the X200 on the anti vibration mounts and to prevent collision with either the enclosure or peripheral systems due to vertical and lateral movement under extreme shock and vibration conditions.





Please note that when using the T407 Cartridge Lock an extra 20mm of Clearance must be allowed at the front

Cable Installation
Please note that when installing cables to the rear of the X200 it is important not to arrange or clamp them in such a way as to impede the free movement of the rear anti-vibration mounts.



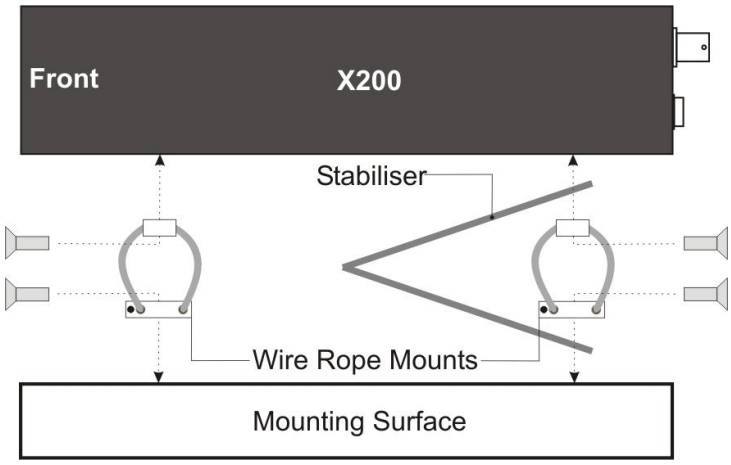
Installation Procedure
It is advised that some form of thread-lock compound should be used on the screws securing the wire rope mounts to both the X200 and mounting surface. This is in order to prevent loosening due to vibration. WARNING - Ensure only a small amount of adhesive is added to the screw points. Excessive amounts will leak onto the circuit board and damage components.

Attach the Wire Rope Mounts to the X200 with four of the countersunk M4 hex-head screws provided and L-shaped hex key. When attaching the rear pair of mounts please ensure that the stabilizer is 'sandwiched' between the mounts and the X200 by aligning the stabilizer holes with the mounting holes in the X200.

Please note that the 'open' end of the C-shaped plastic stabiliser should be attached to the rear wire rope mounts and face backward.

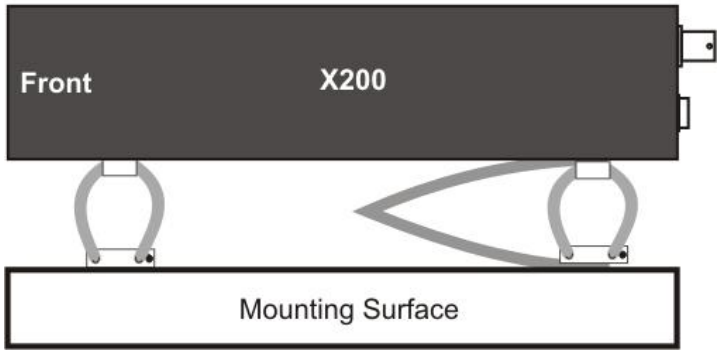
Once all of the Wire Rope Mounts have been securely attached to the X200, use a pair of countersunk M4 hex-head screws to attach the bottom 'feet' of the front Wire Rope Mounts to the mounting surface/enclosure.

Secure the lower 'feet' of the rear Wire Rope Mounts to the mounting surface/enclosure using the remaining pair of countersunk M4 hex-head screws and a standard L-shaped hex key. Ensure that the stabilizer is 'sandwiched' between the lower feet and the mounting surface/enclosure by screwing through the Wire Rope Mount feet, then the stabilizer and into the mounting surface/enclosure.



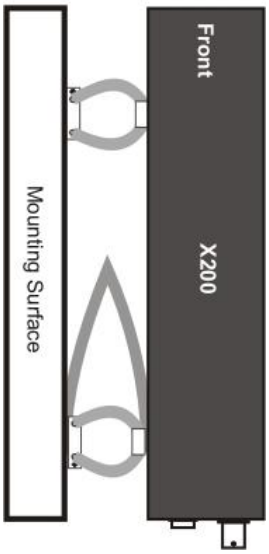
Orientation of Unit
The X200 should be mounted in the following horizontal orientation. This is strongly advised for maximum vibration and shock isolation.

Horizontal



If it is not possible to mount the X200 in the horizontal orientation then the following vertical orientation may be used.

Vertical



It must be noted however that this vertical orientation is not as effective at isolating the X200 from vibration and shock as the horizontal orientation.

The position of the plastic stabiliser, screw types and assembly order remain the same for this mounting orientation.

The X200 must never be mounted by hanging it upside down from a horizontal surface when using this mounting system.

Installation spare parts list

AUDIO CONNECTOR
Locking Nickel plated finish; Deltron part number 590-0500 or Farnell part no. 119-3833.
Locking Black finish; Deltron part number 591-0500 or Farnell part no. 119-3828.

POWER CONNECTOR
2.1mm jack socket (requires 2.5 x 5.5 x 9.5mm DC); Farnell part no. 224923.
Right angle 2.1mm jack socket; CPC part no. AV15499.

GREEN BLOCK
Input/Output connector; Farnell part no. 9632794.

25 WAY D TYPE
Farnell 1099054 Multicomp

9 WAY RS232
Farnell 1099052 Multicomp

SERVICE AND FAIL LED

The Service and Fail LED's on the X300 front panel give a positive indication that a system fault has occurred. If the Service LED is lit then the system will most likely be functional but may not be performing as intended. An example may be one of the cameras has failed. If the Fail LED is lit then the system will not be functioning and requires immediately attention. An example may be that the hard disk cartridge has failed. The Service/Fail conditions are stored on the X300 for review. Each condition has an identifiable code and associated description. The service log can be viewed here; SETTINGS MENU > ADVANCED > VIEW SERVICE LOG menu. The LED will remain lit and the problem which caused the Service LED to light will be listed in the log until the log is reset by selecting RESET SERVICE LOG.

SERVICE CODE	CODE DESCRIPTION	POSSIBLE ACTION
101-116	Open circuit. No current on power input to camera ** and no camera signal.	Check Camera & Cables
201-216	Short circuit. Over-current on power input to camera ** and no camera signal.	Check Camera & Cables
301-316	No signal. Camera disconnected for cameras **.	Check Camera & Cables
811	CAM:DISCONNECTED CAMERA	Check Camera & Cables
815	SYS:TIME ERROR. The real time clock was out of sync by more than +-10 seconds when the time was updated over GPS / LAN.	Check / update system Time.
817	SMS:MODEM SEND ERROR	Check SIM Card/Cable/Power
818	SMS:DIAL OUT FAIL	Check SIM Card/Cable/Power
819	SYS:SMTP FAIL	SMTP error - failed to send email.
840	CAM:INTERMITTENT CAMERA	Camera disconnect detected more than four times - suspect intermittent camera
863	USR:LOG RESET	System Log Reset By User. No action, for information only.
864	HDD:DELETE ALL FILES FAILURE	HDD delete all rec files failed (must have been an unscheduled reboot during the process).
865	HDD:SECURE DISK WIPE FAILURE	HDD card secure card wipe failed (must have been an unscheduled reboot during the process).
866	SD:DELETE ALL FILES FAILURE	SD card delete all rec files failed (must have been an unscheduled reboot during the process).
867	SD:SECURE CARD WIPE FAILURE	SD card secure card wipe failed (must have been an unscheduled reboot during the process).
900	Failure to Write Packet(s) Hard Disc. Recording is not possible.	Check disk
901	Failure to Read Packet(s) Hard Disc. Playback is not possible.	Check disk
902	Failure to Write Sector(s) Hard Disc. Recording is not possible.	Check disk
903	Failure to Read Sector(s) Hard Disc. Playback is not possible.	Check disk
904	Failure to Read/Write SD Card.	Check SD card

PROGRAMMING

The X300 is configured using a tiered menu system. The menu system is accessed using the Reviewer. To enter Menu System press any of the four MENU arrow buttons. To exit the Menu System or to move back up a level press the MENU EXIT button. See the Reviewer section for details on how to its functions / controls.

HELP SCREENS

Throughout the menu system, each page has an associated Help screen and describes the features on that page. Pressing the HELP key on the Reviewer front panel will display the Help page. Use the UP/DOWN arrow keys to scroll through each help page. The help pages included on the X300 are intended as a quick reference with more detailed descriptions contained in the X300 Manual.

SOFTWARE UPDATES

Timespace recorders use proprietary embedded software in the form of **.XOS** files. Software updates for Timespace DVRs and PCLink Suite are available through authorised distributors or by contacting Timespace support; support@tspace.co.uk. From PCLink V7.2 onwards, updates can be automatically downloaded within PCLink.

Software can be uploaded to the recorder by copying an XOS file onto the removable cartridge using the PC/USB interface, then inserting the cartridge into the recorder and navigating to the relevant menu (see below). An example of the .XOS file name is **X300 V1.3.0.xos**

Software Upload

1. Using the USB interface kit, copy the .XOS file from the PC to the cartridge, ensuring that no other XOS files exist on the disk.
2. Insert the cartridge into the X300 and turn the key lock to the locked position.
3. Once the X300 has initialised, use the Reviewer to navigate to the SETTINGS MENU > ADVANCED > and select LOAD SYSTEM UPGRADE.
4. There are three Load options to choose from;
    - LOAD WITH FACTORY SETTINGS (all menu settings will be reset to default values).
    - LOAD WITH CURRENT SETTINGS (menu settings will be maintained where possible).
    - LOAD WITH CARTRIDGE SETTINGS (menu settings will be loaded from the cartridge).

In all LOAD instances, the XOS will be loaded from the cartridge into the X300 internal flash memory. The “with cartridge settings” option will also load the *Settings* from the cartridge e.g. if replicating settings from another X300. The load will take approximately 30 seconds and when the X300 reboots, the current software version is displayed on screen. It can also be checked in the SETTINGS MENU > SYSTEM SETTINGS > SYSTEM INFO menu.

WARNING – X300 MAY BECOME UNUSABLE IF POWER TO THE UNIT IS LOST DURING A SOFTWARE UPGRADE.

Software can be downloaded from the recorder to the cartridge. This feature can be used to replicate settings from one recorder to another when setting up multiple units.

Software Download

1. With the cartridge locked in place in the X300, go to the SETTINGS MENU > ADVANCED and select the SAVE SYSTEM UPGRADE option.

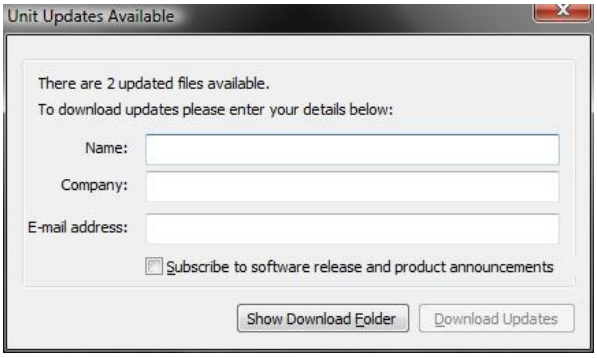
This will save the current X300 Software and Settings to the **current.xos** file on the cartridge. The cartridge could then be used in another X300 to load the Software and Settings (using the above LOAD WITH CARTIDGE SETTINGS option). Also, the current.xos file could be copied from the cartridge onto a PC using the USB kit and kept as a master settings file.

SOFTWARE UPDATES - PCLink

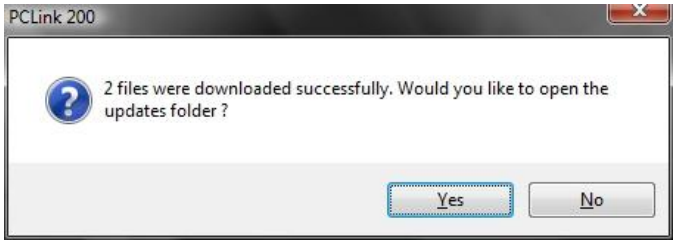
PCLink Suite V7.2 onwards includes a software download feature for acquiring the current and future software release for PCLink Suite and Timespace Digital Video recorders.

From the **Help** menu within PCLink, select **Updates** and choose from the following;

Check for Latest Unit Updates... PCLink will connect to the internet and check for updates for PCLink, X200 and X300. If this is the being run for the first time, updates will be found and downloaded. Subsequent checks where no new version are available, the download will be skipped. Some basic user information will be collected and the option to be included in future software and product notifications.

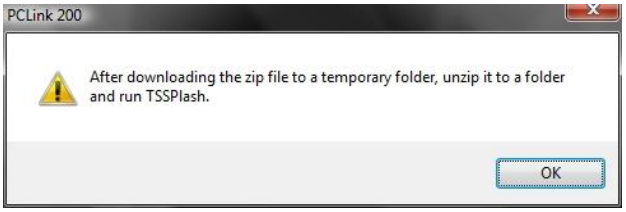


Show Downloaded Updates... PCLink will open the local folder that the updates were downloaded to.



If updates are available for Timespace DVRs, the downloaded **.xos** files will be stored in the DVR sub folder e.g. *Update\X200\X200 V1.9.0.xos*

If a PCLink Suite update is available it will be downloaded as a .zip file using the PCs Internet browser, giving the user the opportunity to **Save** the file to their preferred folder. Once complete, the file must be unzipped to a temporary folder and **TSSplash.exe** run (double clicked). This will initiate the PCLink installer.



LANGUAGE SELECTION

By default the X300 menu system is displayed in the English language.

Timespace Technology can provide a language template file which the user can translate and return to Timespace Technology for incorporation into the X300 software. This will allow all text displayed on the Reviewer to be in the users preferred language.

Language is selected in the SYSTEM SETTINGS > RESET menu. The X300 requires a power cycled before the new language settings will take effect.

VIDEO STANDARD - PAL / NTSC

The X300 offers the ability to switch between different video standards; PAL and NTSC.

PAL (Phase Alternating Line) is the standard used in most European countries with the exception of France. The X300, when configured to use PAL, offers a maximum capture rate of 25 fields per second.

NTSC (National Television Standards Committee) is the standard used in the United States of America. The X300, when configured to use NTSC, offers a maximum capture rate of 30 fields per second.

When configured to use one of these standards, the X300 must use it exclusively. This means that cameras of different types cannot be mixed on the device's inputs.

Note that if the unit is configured for PAL and an attempt is made to play back NTSC recordings, the image will appear vertically 'squashed'. Similarly, if the unit is configured for NTSC and an attempt is made to playback PAL recordings, the image will be clipped.

Switching Video Standards

To switch between the required video standard, the user must configure the unit using the SETTINGS > SYSTEM SETTINGS > CAMERA OPTIONS > VIDEO SETTINGS menu. Once the selection has been made the unit must be power cycled before it comes into effect. PAL is the default setting.

FILE SYSTEM

The X300 uses a proprietary file type with the file extension .XBA. Images from multiple cameras along with audio, GPS and other meta data are stored in these files. The X300 stores XBA files on the cartridge in a loop over the physical disk and does not use a fragmented file structure. The X300 uses a linking mechanism (FAT area) for PC compatibility. This compatibility conforms to the Microsoft standard FAT32 filesystem that is compatible on all PC's and many other systems.

Two types of File System behaviour are available on the X300; Loop and Single Pass.

Loop Recording

The X300 will automatically delete the oldest recordings first when the Hard Disk Cartridge is full (with the exception of write-protected files). Write-protection can be used to keep Alarm recordings but loop the background (Normal) recording.

Single Pass Recording

The X300 records until the Hard Disk Cartridge is full and then stops.

Recordings may be deleted in the SETTINGS > SYSTEM SETTINGS > RESET menu or loop recording enabled so that the oldest files will be overwritten first. The File System Recording Mode is set in the SETTINGS > SYSTEM SETTINGS > FILE SYSTEM menu.

VIDEO COMPRESSION

The X300 records images, audio, GPS and other meta data into 5 minute, 10 minute or 1 hour proprietary format files ending with the .XBA file extension. For security and optimisation reasons .xba files can only be viewed on a PC using the proprietary PCLink200 software or authorised Timespace partner software.

The images are compressed using MPEG2 in Full Update mode. In Full Update mode, each image stands alone in its own right and uses no prediction from previous images. The advantage of full update recording is that each image is independent and free from any inter-image distortion. The images can also be searched easily during playback.

A trade-off between image quality and file size can be made by selecting different levels of video quality on the X300: low, medium, high, v.high, v.v.high and supd1. The low setting uses greater compression than the higher settings and consequently less disk space is used.

As image quality rises however so does the resultant file size so a decision will have to be made as to the level of image quality needed and the length of recording required to be stored on any given size of Hard Disk Cartridge. The X300 uses a variable bit-rate to produce an average image size of xKB – x is dependent upon the quality setting (see below for images sizes);

SUPD1	50KB per image
VV.High	42KB per image
V.High	34KB per image
High	26KB per image
Medium	18KB per image
Low	10KB per image

The X300 can record in two resolutions;

- D1 Frame Resolution 720 x 576 (pixels)
- 2CIF Frame Resolution 720 x 288 (pixels)

The resolution will automatically change from 720x288 to 720x576 when increasing from the SUPER to SUPD1 as the image becomes interlaced.

The X300 provides an on-screen calculator during setup when using the Reviewer. It shows how long the recordings will last before they are overwritten. This is based on the current quality, images per second settings and the installed cartridge size.

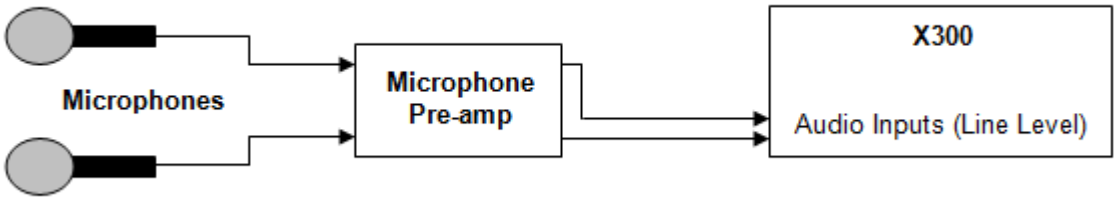
AUDIO

The X300 has two line-level audio input and output channels via a 5 pin DIN connector on the rear panel. The two input channels record in Stereo and can be assigned to different recording modes e.g. Normal Record, Timer Record and Alarm Record.

The audio channels can be played back individually or together when viewing footage in PCLink200 PC software. They can also be disabled during playback.

The Reviewer can also be used for audio playback through its built in speaker. The audio signal is carried to the reviewer via the RJ45 reviewer cable, no other connections are necessary. **NB** playback via the Reviewer is in mono via channel 1 only (Left).

As the audio inputs on the X300 are line-level, some microphones will require the use of a dedicated preamplifier in order to raise their very low levels of output to line-level.



The X300 is configurable so that the line-level input range can be set from 0.12 – 2.0Vrms (sensitivity). Audio sampling rate determines how much high frequency content there is in the recording. The X300 samples at 44.1kHz (C.D. quality) which offers near perfect reproduction. The audio sampling resolution determines the amount of noise in a system. The X300's 16 bit sampling resolution is C.D. quality with imperceptible noise, as long as the user sets the recording level to the maximum possible (without clipping) to use the full dynamic range.

PC ACCESS PRECAUTIONS

The X300 file system uses a standard FAT32 linked index so that a PC can read the contents. The PC will access the cartridges in a different way to the X300. The X300 will not be able to read every FAT32 file system written by the PC and it is therefore important to restrict what the PC does to the file system.

Permitted on a PC

- Reading the .xba files
- Modifying the write-protect status of files
- Performing disk utilities that read the disk (e.g. Scandisk) but do not modify disk

Not Permitted on a PC

All write accesses to the disk if it is to be reused in an X300. These include:

- Formatting the disk on PC (including any Disk Manager MBR checks/fixes)
- Defragmenting the disk
- Deleting files
- Renaming files
- Generating new files
- Creating a recycle bin on the disk

NB if any of the above non permitted actions were used, the cartridge will need to be reformatted on the X300 using the Reviewer. This will erase all data on the cartridge and format it correctly for further use in the X300.

PC NETWORK ACCESS

The X300 can be accessed through a number of PCLink Suite Applications included in the USB Kit. Files can be downloaded, images viewed, X300 controlled and settings adjusted over LAN.

Each feature runs over the LAN using a specific protocol and on a specific network port.

Security measures on a network such as Firewalls, encryption and MAC address filtering may need to be adjusted in order to achieve this. Security applications such as Norton and Symantec on the PC may need to be configured to allow the PCLink Suite applications to operate correctly. Any installed network or local PC firewalls (including Windows Firewall) may have to be instructed to allow the use of these ports to communication between the PC and the X300.

Ports:

- PCLink200 uses UDP, FTP and Telnet.
- UDP port 69 (standard TFTP port),
- FTP TCP port 21 (standard FTP port).
- Telnet TCP port 23 (standard Telnet port).
- RemoteLink UDP port 5465 (X200 only).
- LANLink UDP port 69 (standard TFTP port).
- Time Adjust TCP port 8463 (can be configured within the X300 menu system).

Authentication

FTP / Telnet username; user01
FTP / Telnet password; PASS01

WATERMARK

The X300 uses a fragile watermark. Any modification to the recorded file will destroy the watermark.

The image, audio and ancillary (meta) data that makes up the recorded file is passed though a function that generates a "magic number" or hash code from the data. A hash code is created automatically by the X300 every ¼ of a second for each ¼ second of data. Each hash is then passed though an encryption function and then stored in the file.

A sequencing number ensures that all hash codes and corresponding data are present and where multiple files exist that no files are missing.

To check that a number of files have not been altered or modified in any way, the watermark checking program (e.g. PCLink) recalculates the encrypted hashes (watermarks) and checks these against the watermarks provided in the file. If all the watermarks match the recorded file has not been tampered with. The watermark is "destroyed" when the encrypted hash code stored in the file and the encrypted hash code of the data do not match. PCLink produces a report which can be used in court to validate recorded files.

The watermark is always on the X300 i.e. all recordings have the watermark embedded in real-time as the footage is laid to disk, it cannot be turned off. Within PCLink200, you can generate a report for a number of files. You can also select a file for watermark checking.

Encryption type;

- Hashing function: SHA256
- Encryption function: AES256

SEQUENCING

In addition to every ¼ second being protected by a Watermark, each watermark has its own unique sequence number. This protects any images being removed from a file and protects any files being removed from a sequence of files.

WATERMARK / SEQUENCING REPORT

Within PCLink200, a report can be produced against an image, file and/or sequence of files.

PCLink will analyse the data against the encrypted hash and analyse the data's sequence numbering. If any images have been modified, any images removed or any files removed, PCLink will identify them and report accordingly. Files fail if:

- Any video/audio/meta data frame (other than the last in a non-closed file) had an invalid watermark
- Video/audio/meta frames were missing or out of sequence (in newly generated files)
- Files passed to the checker were not in sequence (in newly generated files)
- Files are missing their sequence frame (in newly generated files) in properly closed files.

WATERMARK FILE

From V1.1.0 onwards, the X300 maintains a watermark file on the cartridge. The file contains a list of recording files on that particular disk followed by a SHA-256 watermark. If the X300 is set to loop record, some files that are in the watermark file many not exist on the disk if it has looped and overwritten them. The information in the watermark file is only used by the file checking report in PCLink. If you do not need to use the watermark file / PCLink then the watermark file on the cartridge can be ignored. **NB** A text editor such as Wordpad should be used to view the watermark file (Notepad won't be able to paginate the file format correctly).

GPS

The Global Positioning System (GPS) is a worldwide radio-navigation system able to calculate position using triangulation based upon satellite signals. The GPS must be positioned so its antennae have a clear line of sight of the sky – obstructions such as foliage and reflected signals in built-up areas can reduce the accuracy.

The X300 can be fed GPS data and embed coordinates into images for location identification and real-time mapping playback in PCLink200.

The X300 uses the NMEA-0183 Interface Standard. GPS data is received into the X300 RS232 port using serial data communication.

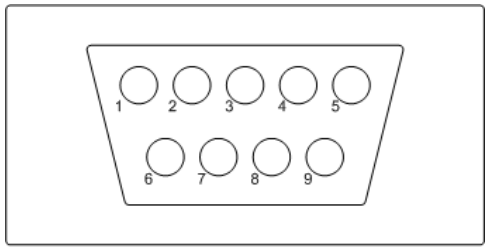
The X300 can provide +5V power to the GPS mouse through the serial port. Only GPS units which operate at this voltage and draw no more than 200mA should be used. The X300 has been tested with the following GPS receivers:

- Garmin GPS16 LVS & GPS18 LVC & GPS18x LVC
- RoyalTek Sapphire Serial GPSr
- Fortuna U2 Smart GPS
- Leadtek LR9450

NB When using the Garmin GPS18 LVC the X300 baud rate must be set to 192,00.

Connection

The GPS receiver is connected to X300 through the RS232 port. The diagram below shows the 9 way D-type connector viewed from the back of the X300 and details those pins to be used for the serial data connection and the +5V supply to the GPS receiver.



RS 232
(9 pin male d-type)

Pin	I/O	Connection
4	>	+5V supply
5		0V GND
9	<	DATA

> X300 output
< X300 input

Options

The X300 GPS menu options allow the embedding of GPS position and speed, assuming a valid GPS signal is being received and the data passed correctly to the X300.

If a GPS receiver is connected but satellite lock has been lost then it is still possible to record the data but it will not indicate position, speed, date or time and the actual content may vary according to the type of GPS receiver employed.

Time Sync

The X300 Digital Video Recorder includes a clock which is used to timestamp recording files and overlay the date and time on recorded images. Although accurate, the system can be configured to synchronize the clock with the date and time information received from the GPS receiver.

When a GPS unit is plugged into the X300, and it has locked onto the satellites it then sends GPS time and position and other data every second. If after 10 seconds the X300's internal clock consistently show a time error compared to the GPS unit then the time error is noted. On the next power cycle the time error is corrected. A correction of up to +- 30 minutes is made. Note that the X300 needs to be within +- 30 minutes from the accurate GPS time as the minutes and seconds only are corrected not hours or date.

Local Standard Time - The time received from the GPS receiver is always UTC (Coordinated Universal Time) which is the same as GMT (Greenwich Mean Time). In order to correctly work out the error between the local standard time (used by the X300's internal clock) and that received from the GPS receiver, the system must be set with the correct time zone offset.

GPS Baud Rate - Set the X300 data rate according to the GPS mouse you are using. Rates configurable include; 2400, 4800, 9600 and 19200, 38400 bps.

NB It maybe necessary to change the baud rate on the GPS mouse and set it to a specific rate inline with the X300 setting. Reference the GPS mouse product instructions to configure the baud rate then power off/on the X300 (whilst connected to the GPS).

REMOTE OPERATION (GSM / LAN / Wifi / 3G)

The X300 system provides a number interfaces to remotely control and configure the recorder as well as reviewing recorded footage and displaying live camera views.

A **GSM** modem can be connected to the **Serial** port on the X300 and used to dial in to the X300 to view live camera images and configure the X300 menu settings. **SMS** messages can be configured to send texts alerts for example on an Alarm input or Motion Detection. SMS messages can also be configured to send the system Health update upon power up or configured time.

The X300 supports **FTP** over TCP/IP using the Ethernet (LAN) socket. The X300 FTP server allows video files to be downloaded using either a hard-wired, wireless or 3G IP connection. A web browser can be used to FTP onto the X300 by typing the following in the address bar;

ftp://user01@10.0.0.200/ (default IP). This will prompt for the password.

ftp://user01:PASS01@10.0.0.200/ (default IP). This will log straight in.

Supported browsers are: Microsoft **Internet Explorer** & Mozilla **FireFox**. A third party FTP client can also be used, for example **FileZilla**. If prompted, the FTP authentication details are;

Username: user01
Password: PASS01

The X300 has a comprehensive set of **RS232** control commands that run over the **Serial** port. This open architecture allows full integration with third party hardware/software. Please refer to the RS232 Control section of this manual for details on RS232 external control of the X300.

In addition to the RS232 support, the X300 provides a **Telnet** interface over TCP/IP. The same command set detailed in the RS232 section can be used over ethernet using the Telnet protocol.

PCLink Remote features include; *Live View, Playback, Configuration*. A brief overview of the applications included in PCLink Suite can be found on the PCLink Suite page of this manual. For detailed application instructions, see the separate PCLink Suite manual available here; www.tspace.co.uk.

RS232 EXTERNAL CONTROL

The X300 software includes external control via RS232 (rear connector) and provides two enhanced features:

- Files can be created and written into on the X300 hard drive. The files can also be read back.
- The X300 can be controlled via Commands. This allows many playback and recording functions to be carried out by an external device.

These two features are enabled under the SETTINGS > EXTERNAL EQUIPMENT > GSM / REMOTE SETTINGS menu by changing the RS232 setting to a BAUD RATE e.g. 115,200.

Baud rates of 2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200 can be selected. The external commands operate over RS232 port 1 on the rear of the unit. This port is also used for GSM modem control. GSM control cannot be performed at the same time as external control.

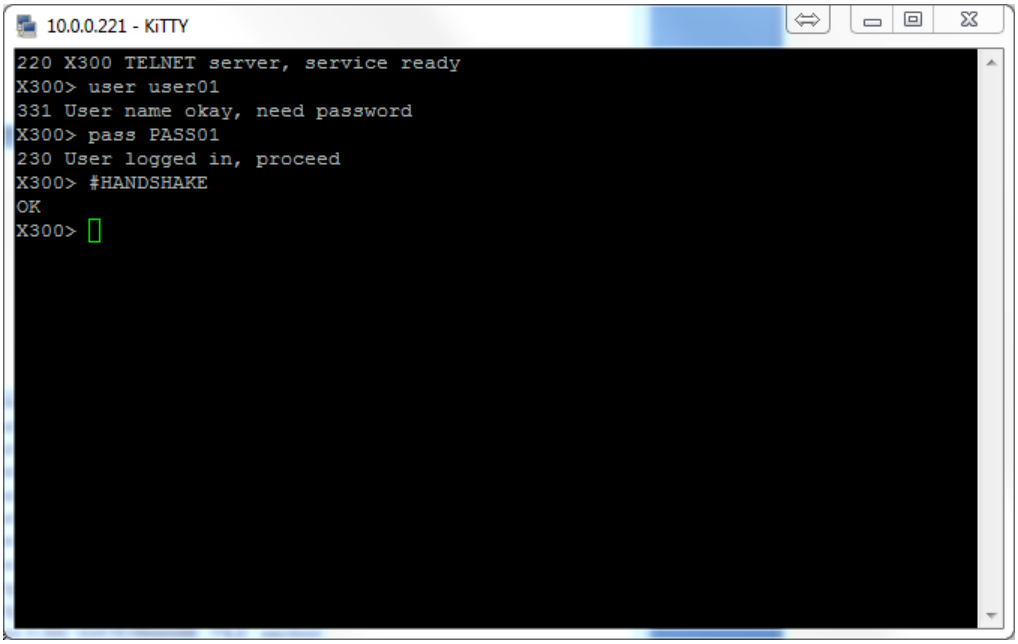
Connect the X300 RS232 port to a PC using a serial cable. Some modern PCs do not come with a serial port, you can however use a USB Serial Adaptor. Two adaptors that we have tested here are:

- NEWLink – www.newlinkproducts.co.uk
- FTDI - FT232R – www.ftdichip.com

The COM port number will vary depending on your PC and which cable you have. For example on a laptop the NEWLink cable was assigned COM10.

A simple test to check connectivity between PC and X300 you can try following with a Telnet client (e.g. Putty, Termite);

- Telnet (port 23) to 10.0.0.200 (default X300 IP)
- Enter the username; user01
- Enter the password; PASS01
- Type **#HANDSHAKE**; you should receive **OK**.



Tokens / Protocol

The X300 is always looking for tokens to perform actions. The protocol is that commands are issued and no response monitored. The remote device should monitor the OK<R> messages that are returned. It is usually looking for all the tokens apart from when writing file data. In this case only the "**#**ENDFILE<R>" is searched for.

All commands sent to the X300 are acknowledged, for example if the client sends #RECSTART<R>, OK<R> will be returned to the client to signify that the command was successfully carried out. In the case of commands like GETTIME and GETDATE, OK<R> will not be returned, but the data requested, followed by a <R>. In the case of PREVIOUSFILE and NEXTFILE, OK<R> will be replaced with either LAST<R> or FIRST<R> if there are no more files to play next or previous, respectively. When sending commands, the sender to the X300 can wait for an OK before sending another command, or one of the other variants listed above.

There may be a need for a hold off time between certain commands (e.g 10 mS), as the X300 may take a finite time to do certain tasks. To add delay you could simply put spaces between one command and the next and these are ignored. The X300 does have a FIFO queue of 2048 bytes so can buffer data. Certain commands can be followed immediately with other commands for example:

#CAMERA_<1-16><R>#PLAY<R>	-play a given camera
#SETTIME_<12:23:45><R>#SETDATE_<23/09/10><R>	-set time and date

Definitions

_	- A space
<>	- Parameter, don't include brackets
<R>	- return (char 13)
FAIL	- File system failed to create file, aborted
FAIL	- File name is illegal
OK	- Acknowledgement, Command carried out
CLIENT	- The external equipment that is connected to the X300 via RS232
BAUD Rate	- This shall be selectable from within a menu
<TEXT>	- Textual data

Writing files

Write File command: **#WRITEFILE,<FILENAME><R>**
Close File command: **#ENDFILE<R>**

A return <R> character at then end of the "**#**WRITEFILE" command will signify the beginning of the writing process. All data from this point onwards will be written into the file specified. If the file system fails to create the file for any reason, FAIL<R> will be returned to the client.

A check is done on the file name length, if the user overruns (number of characters in total is greater than 60), FAIL<R> will be transmitted to the client, and the write command is aborted. The user should only use uppercase letters and numbers in the filename and the space character. The extension ".EXT" is automatically applied by the X300, for example

Command	Created file
#WRITEFILE,REPORT<R>	REPORT.EXT
#WRITEFILE,TICKET DATA 6 DEC 2010<R>	TICKET DATA 6 DEC 2010.EXT

If the file has been created effectively, OK<R> will be sent to the client. The client may now proceed to send the file data. When the token #ENDFILE<R> is received, the file is closed, and the client will be

sent OK<R>. A new file may now be opened if required. In the example below, all the text in BOLD is written to the file “TICKETS.EXT”

#WRITEFILE,TICKETS<R>
DATE: 6/12/2010
TIME: 11:48:00
LOCATION: KINGS CROSS
#ENDFILE<R>

Reading files
Read File command: **#READFILE,<FILENAME><R>**

A return <R> character at then end of the #READFILE<R> command will signify the beginning of the reading process. Data will now be transmitted from the X300 to the client. The handshaking line CTS on port 1 may be used if required to pause the data flow. If the file system fails to open the file for any reason, FAIL<R> will be returned to the client. A check is done on the file name length, if the user overruns, FAIL<R> will be transmitted to the client, and the read command is aborted. If all is good, OK<R> is sent followed by the file data followed the token #ENDFILE<R>. The following example reads the file “TICKETS.EXT”.

Sent to X300	Received from X300
#READFILE,TICKETS<R>	DATE: 6/12/2010
	TIME: 11:48:00
	LOCATION: KINGS CROSS
	#ENDFILE<R>

Recording
If for any reason recording stops, even if instructed to, the X300 will return #RECSTOP<R>

#DISKREMOVED<R> will be sent under two conditions.

1) The disk is removed from the X300 at anytime post X300 initialization.
2) Live view always has been enabled and the X300 boots without a disk.

#DISKIN<R> will be sent under two conditions.

1) The disk is inserted into the X300 at anytime post X300 initialization.
2) Live view always has been enabled and the X300 boots with a disk.

Control Commands

#RECSTART<R>	- start recording
#RECSTOP<R>	- stop recording
#STOP<R>	- stop playback
#PLAY<R>	- start playback (standard)
#REPLAY<R>	- play backwards (standard)
#WIND<R>	- fast forwards (standard)
#REWIND<R>	- rewind (standard)
#XPLAY_<FACTOR><R>	- plays at the specified factor speed (-/+)
#CAMERA_<1-16><R>	- camera to control
#LIVEVIEW<R>	- switch to live view
#AUTOLIVEVIEW<R>	- switch to live view automatic mode
#JOGFORWARD<R>	- one frame backwards
#JOGBACKWARD<R>	- one frame forwards
#GOTONEWESET<R>	- go to the newest recording
#GOTOOLDEST<R>	- go to the oldest recording
#GOTO_<HH:MM- DD/MM/YY><R>	- go to time DD:MM:YY_HH:MM
#GOTO_<HH:MM:SS-DD/MM/YY><R>	- go to time HH:MM:SS_ DD:MM:YY
#SETTIME_<HH:MM:SS><R>	- sets the time
#SETDATE_<DD/MM/YY><R>	- sets the date
#GETTIME<R>	- gets the time
#GETDATE<R>	- gets the date
#NEXTFILE<R>	- when playing, skips to the beginning of the next file
#PREVIOUSFILE<R>	- when playing, starts at the beginning of the currently playing file. - when stopped and #PREVIOUSFILE is issued twice, followed by a play, the previous file will begin playing from the beginning.
#GETFILETIMEDATE	- gets the current playing position of the currently play file.
#GETSTATS	- returns statistics
#DELETEALLREC	- removes all recording files from disk
#LED1_0/1	- Turns LED 1 output ON (1) or OFF (0)
#LED2_0/1	- Turns LED 2 output ON (1) or OFF (0)
#ALARMOUT_0/1	- Turns ALARMOUT LED Output ON (1) or OFF (0)
#ALARMIN1_0/1	- sets the state of the Digital input 1 ON(1) or OFF(0)
#ALARMIN2_0/1	- sets the state of the Digital input 2 ON(1) or OFF(0)
#ALARMIN3_0/1	- sets the state of the Digital input 3 ON(1) or OFF(0)
#ALARMIN4_0/1	- sets the state of the Digital input 4 ON(1) or OFF(0)
#CAMTEXT_<1-16>_<TEXT><R>	- writes text to the console at record time, Char 255 moves to the beginning of a new line. Maximum 49 characters per camera.
#DISKSTATUS	- returns #DISKREMOVED or #DISKIN
#MODESTATUS	- Returns #RECORD, #PLAY or #IDLE
#SETCAMTEXT_<1-16>_<TEXT><R>	- sets the camera text. This is fixed to 12 characters per camera.
#SETFILETEXT_<TEXT><R>	- sets the filename text. Max 12 characters.
#LOGRESET<R>	- resets the service log
#LOGREAD<R>	- reads the service log and returns up to the 10 latest entries
#LED1<R>	- Returns the status of LED1, Returns 0 or 1
#LED2<R>	- Returns the status of LED2, Returns 0 or 1
#ALARMOUT<R>	- Returns the status of ALARMOUT, 0 or 1
#ALARMIN1<R>	- Returns the status of ALARM Input1, 0 or 1
#ALARMIN2<R>	- Returns the status of ALARM Input2, 0 or 1
#ALARMIN3<R>	- Returns the status of ALARM Input3, 0 or 1
#ALARMIN4<R>	- Returns the status of ALARM Input4, 0 or 1
#MULTIVON<R>	- Turns Multiview On
#MULTIVOFF<R>	- Turns Multiview Off
#LOG_<TEXT><R>	- Logs a text message to the X300's service log (does not light service LED). Sending RESET LOG as the text marks off there LANLink should read the messages up to. OK<R> is returned if the daily quota of 10 has not been reached, other wise 10/DAY<R> is returned

Commands in Detail

#GETFILETIMEDATE
Gets the current playing position of the currently playing file. Please use #MODESTATUS to tell if the time you are reading is live play or if in idle mode, as the time you receive will ways be the current/last position played.

#GETSTATS
Will return the following stats in the same format. #END<R> signifies end of file. The stats may possibly grow in the future, but will be append to this list. Scanning for #END after the data has been retrieved. Data may be scanned for by capturing just after the colon (:) and just before the end of line <R>

Capacity: 500.11GB
Used: 0.38 %
Write Protected: 0.00 %
First File: 16:09:00 - 06/03/14
Last File: 16:50:00 - 06/03/14
Days Recording: 0.03
Model Number: Hitachi HTS545050B9A
Serial Number: 100924PBN400B7F2LW7L
#END

#DELETEALLREC
The #DELETEALLREC command will stop the current recording and delete all recording files. When complete, OK<R> will be returned
#LED1, #LED2, #ALARMOUT

The following 3 commands control the 2 digital outputs and the Alarm output. These settings will be OR'd with the current hardware states of the X300.

#LED1_0/1<R> – Turns LED1 ON or OFF
#LED2_0/1<R> – Turns LED2 ON or OFF
#ALARMOUT_0/1<R> – Sets the active state for the alarm output CLOSE/OPEN.

The following commands will READ the status of the LED and ALARM out ports:

#LED1<R> - Returns the status of the LED1 port, 0 = off, 1 = on
#LED2<R> - Returns the status of the LED2 port, 0 = off, 1 = on
#ALARMOUT<R> - Returns the status of the ALARMOUT port, 0 = off, 1 = on

#ALARMIN1, #ALARMIN2, #ALARMIN3, #ALARMIN4
Each one of the alarm inputs can be virtually activated by using the following commands, which control each alarm input independently. These settings will be OR'd the current hardware states of the X300.

#ALARMIN1_0/1<R>
#ALARMIN2_0/1<R>
#ALARMIN3_0/1<R>
#ALARMIN4_0/1<R>

By using these commands, a camera may be assigned to each alarm input, thereby allowing recording on each channel to be selective and/or allow for a different set of recording rates between Normal and Alarm recording

The following commands will READ the status of the ALARMIN pots:

#ALARMIN1<R> - Returns the status of the ALARMIN1, 0 = off, 1 = on
#ALARMIN2<R> - Returns the status of the ALARMIN2, 0 = off, 1 = on
#ALARMIN3<R> - Returns the status of the ALARMIN3, 0 = off, 1 = on
#ALARMIN4<R> - Returns the status of the ALARMIN4, 0 = off, 1 = on

#CAMTEXT
#CAMTEXT_1_HELLO WORLD<R> - "Hello world" will be written at the top left hand corner
#CAMTEXT_3_<255><255><255>HELLO<R> - "Hello" will be written on the 4 line on camera 3

If text has been assigned to a camera, simply issuing blank text will clear all RS232 overlay text from that camera. A maximum of 49 characters may be sent to the screen including new line control codes. E.G #CAMTEXT_3_<R> will clear the text (please note the space after 3)

#SETCAMTEXT_<1-16>_<TEXT><R>
Sets the camera text as via the Camera Options menu on the X300. 1-16 is the camera selection followed by the actual text. This is fixed to 12 characters per camera.

#SETFILETEXT_<TEXT><R>
Sets the filename text for the X300 file system to use. Max 12 characters.

#LOGRESET<R>	Resets the service log
#LOGREAD<R>	Reads the service log and returns up to the 10 latest entries

Examples

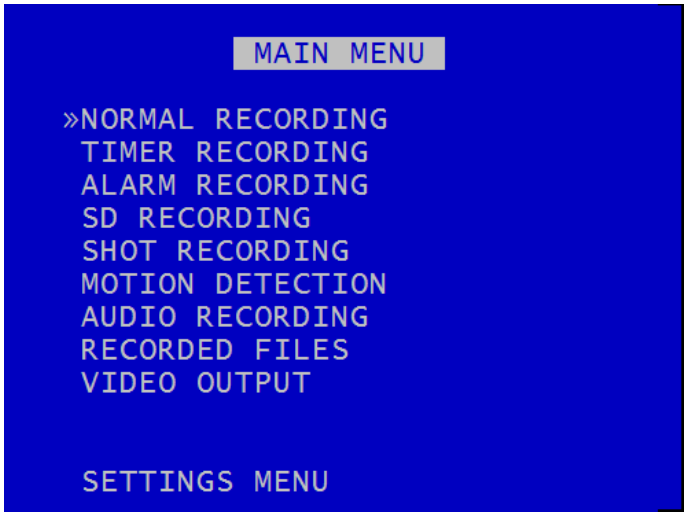
CAMERA_1<R>	switch to camera 1 (either in live/auto view or during playback)
XPLAY_0.5<R>	plays forward at half speed
XPLAY_-3.2<R>	plays in reverse at 3.2 times real time rate
XPLAY_10<R>	plays forwards at 10x speed
SETTIME_12:23:23<R>	sets the time in the format HH:MM:SS
SETDATE_23/09/05<R>	sets the date in the format DD:MM:YY
#GETTIME<R>	to which 12:23:23<R> is returned
#GETDATE<R>	to which 23/09/05<R> is returned
#LED1_1<R>	turn LED1 on
#CAMTEXT_1_Hello><R>	writes "Hello" to the console at record time in the top left corner.

A windows demonstration tool is available upon request by emailing support@tspace.co.uk

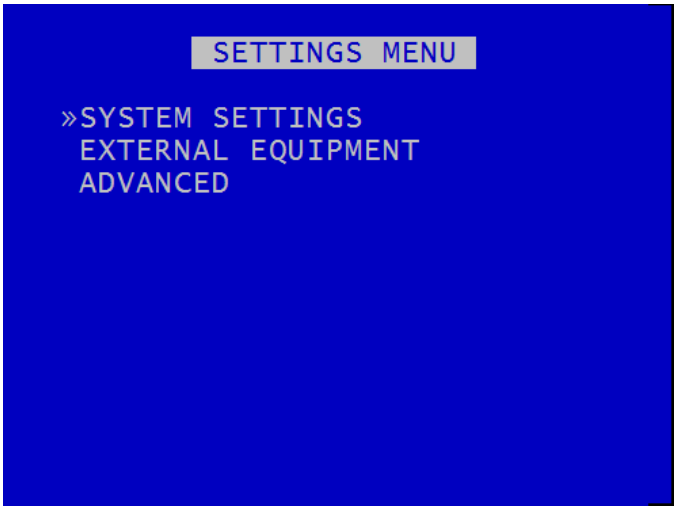
X300 MENU SYSTEM

The X300 is configured using a tiered menu system. There are two top level menus through which all features and settings are configured.

The MAIN MENU relates to the Recording functions, files and video output:



The SETTINGS MENU is where the X300 and any connected equipment are configured:

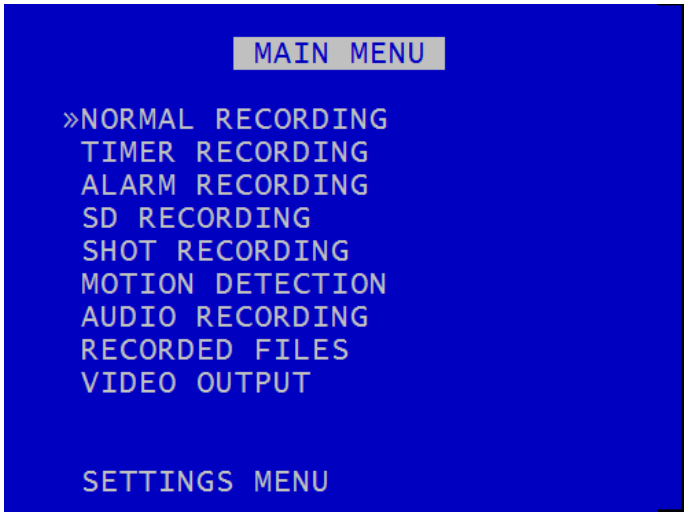


Each menu, feature and setting is detailed in the following pages.

Across the different recording modes, the X300 has some common settings for example Images per Second. The IPS can be configured from 0.1 to 50 per camera – to save duplication; these options will only be documented in the first instance and subsequent features should be assumed to be the same unless explicitly stated.

The majority of menu screenshots are based on the X300-4 (4 channel DVR). If using an X300-16 (16 channel DVR) there will be some subtle differences for example in Normal record you will see all 16 Cameras as opposed to the 4 Cameras show in the manual.

MAIN MENU

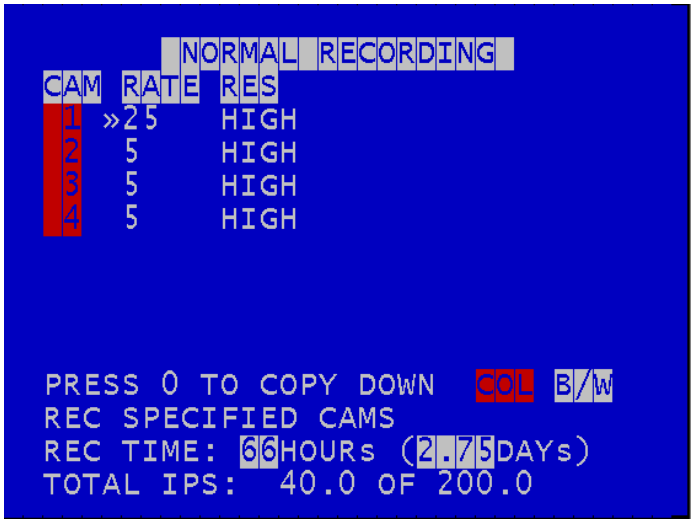


Recording modes in order of priority are:

1) SHOT RECORDING
2) ALARM RECORDING
3) TIMER RECORDING
4) NORMAL RECORDING

SD RECORDING can be running in parallel to any of the above recording modes.
MOTION DETECTION is used as a trigger to start one of the recording modes. It isn't a recording mode on its own.

Only one mode is active at any one time. For example if ALARM recording occurs during NORMAL recording, ALARM takes control but reverts back to NORMAL once ALARM recording has finished.



This menu sets the Normal recording configuration. Recording is activated by pressing the record button on the front of the X300 or the Reviewer.

Images per second (**RATE**) and resolution **(RES)** can be set individually for each camera.

RATE can be set to; "-" (OFF), 0.1, 0.5, 1, 1.5, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12.5, 15, 20, 25, SUPD1 (50ips)

X300-04 & X300-16 maximum ips is 200.

RES can be set to; LOW, MEDIUM, HIGH, V.HIGH, VV.HIGH, SUPER and SUPD1

NB – SUPD1 uses DOUBLE the images per second due to recording in interlaced mode (both fields). Therefore 4 cameras were setup at 5IPS each, but one was SUPD1 RES, then the total IPS used would be 25.

REC SPECIFIED CAMS - This sets the X300 to record the cameras in the manner specified e.g. in the above image; CAM1 25ips HIGH and CAMS2-4 5ips HIGH. The alternative setting is **REC CONNECTED CAMS** which would only record the cameras that the X300 has detected as being connected. This allows the X300 to be deployed with 1-4 cameras without reconfiguring the menu, just play & play.

The total number of configured images/sec is displayed along with the maximum. Any adjustment to the camera ips, resolution or number of recorded cameras will affect the REC TIME. The **REC TIME** is an indication of the number of Days, Hours, Minutes that the X300 will record for based upon the current settings and entire installed cartridge capacity.

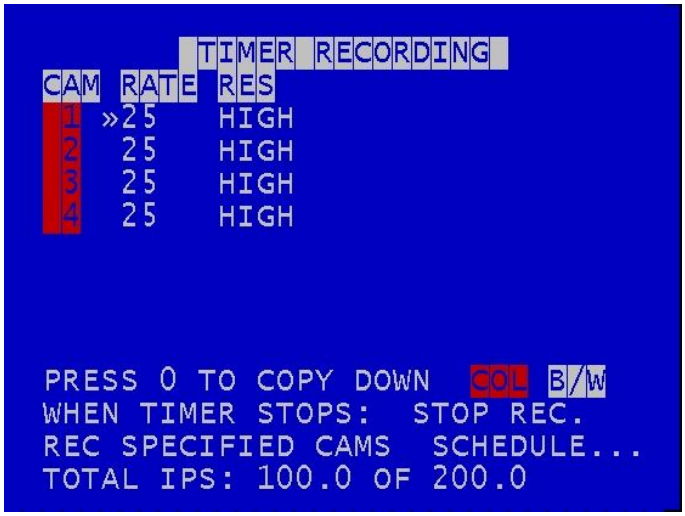
Connected cameras are identified by highlighting the relevant camera number with either a red background (indicating colour) or a white background (indicating black & white).

A copy down feature is available for configuring multiple camera settings. The settings for the currently selected camera will be copied down to all remaining cameras, subject to the global IPS limit.

R RECORDING

By default all cameras are set to record in NORMAL RECORD mode and recording behaviour is set to RECORD AT POWER UP, enabling quick deployment – just connect cameras.

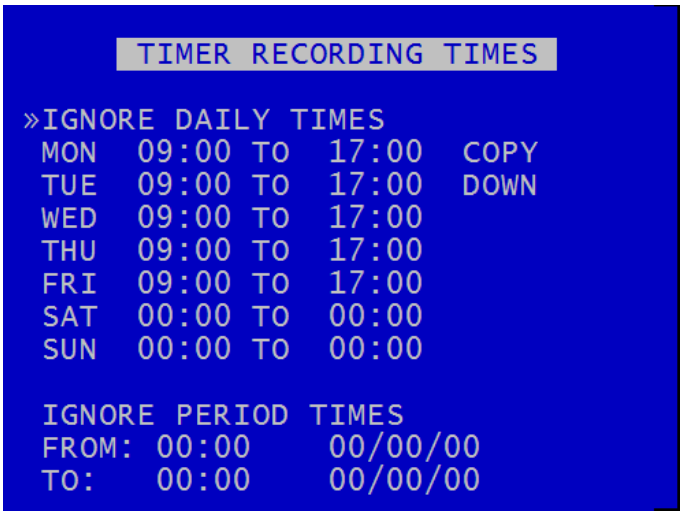
Hint – RECORD AT POWERUP is found in SETTINGS > ADVANCED.



Daily on/off timers can be set to provide timed recording. This menu sets the recording configuration and the time. During timer recording the settings in this menu apply.

WHEN TIMER STOPS: At the end of a period of Timer recording the X300 can either stop recording or record in Normal record mode. The latter can be used if two recording styles are required based on time.

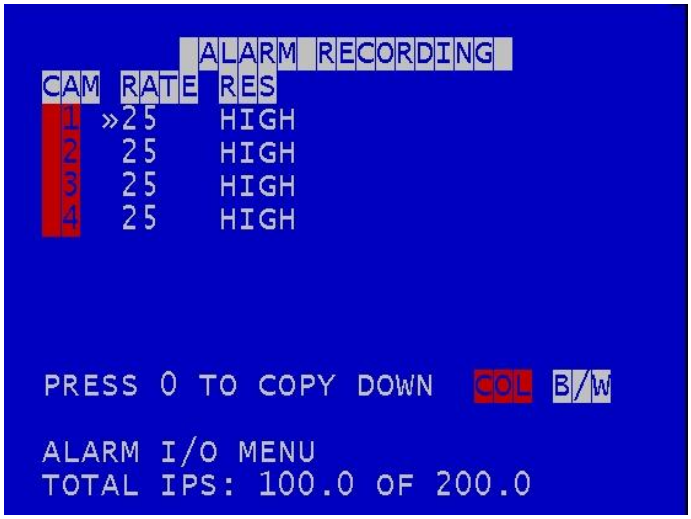
Enter the daily start and end times in the **SCHEDULE** menu. **IGNORE DAILY TIMES** disables timer recording. Select record **BETWEEN** or **OUTSIDE** daily times to enable the timer schedule.



A PERIOD of timer record can be set. This can be used for example to record between a start date and end date. If both DAILY TIMES and PERIOD TIMES are selected, the X300 will record only in the period and also only in the daily times shown.

By default the TIMER SCHEDULE is set to Mon-Fri 9-5 and all day Sat/Sun. Selecting RECORD OUTSIDE DAILY TIMES will give a quick outside office hours style recording.

ALARM RECORDING



Alarm recording is activated by the alarm inputs. This menu sets the alarm recording configuration.

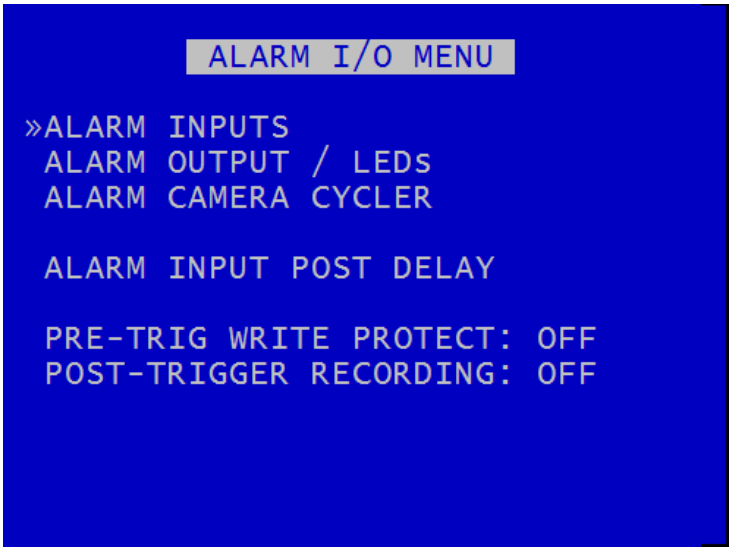
Alarm recording can be triggered by setting the function of the alarm input to be ALARM REC. Inputs can also be used to trigger other functions and modes of recording.

Alarm recording options and INPUT / OUTPUT configuration are located in the ALARM I/O sub menu.

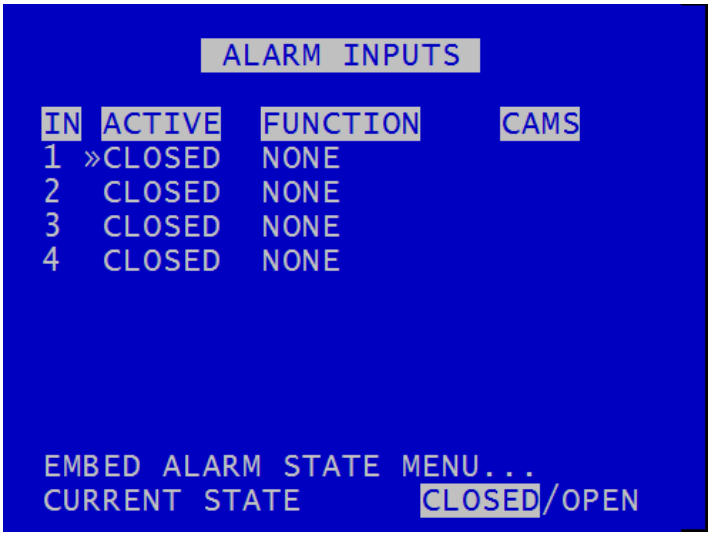
PRE-TRIG WRITE PROTECT specifies the duration prior to the alarm recording for which files will be marked as write protected. This assumes that another mode of recording was already writing files to disk.

POST TRIGGER RECORDING specifies the duration of recording after the alarm trigger. Once post trigger has elapsed, recording will stop or return to the previous recording mode.

PRE and POST TRIGGER options will only function with ALARM recording mode.



The X300-04 has 4 alarm inputs and 3 outputs on the rear panel screw terminal block. The X300-16 has 8 alarm inputs and 3 outputs on the two 25 way D-type connectors.



Inputs can be OPEN or CLOSED circuit as the active alarm state. Closed circuit is defined as 0 to 0.8 voltage. Open circuit is defined as 2 to 5V. If an alarm input number is highlighted, this indicates its current state is closed. No highlight indicates the state is open. Use the left and right menu buttons to toggle the ACTIVE state between CLOSED and OPEN. The FUNCTION defines the action of the X300 when the selected alarm input is active. The function is active for the duration of the alarm (plus post trigger time if selected):

NONE – No action.
NORM REC – Switches Normal Recording on.
ALARM REC – Switches Alarm Recording on.
SHOT REC – Switches Shot Recording on.
SWITCHER – Sets the Video Switcher (Main Video Out) to the selected camera.
SWITCHER 2 – Sets the Video Switcher2 (Aux Video Out) to the selected camera (X300-16 only).
MOTION NORM– Used to switch between NORMAL and MOTION modes.
TIMER REC – Switches Timer Recording on.
SMS MSG – Send one of the six user defined SMS text messages (GSM modem required).
GSEN RESET – Resets the GSensor alarm condition (XP200 required).
HEALTH PAGE – Displays the DVR Health page.
C1: IMG->GSM – Initiate transfer of Camera1 image over GSM using settings in the REMOTE SETTINGS menu. Feature can be used with an LED output, see ALARM OUTPUT/LEDs for details. Alarm inputs 1-4 can be used to identify different events, however the image will be take from Camera1.
PTZ PRESET – Accesses the PTZ preset camera positions. 8 presets are available (setup using the PTZ menu) and a trigger can be used to invoke that position upon alarm state change.
CAM CYCLER - Sets the Video Switcher to cycle through certain cameras and the health page, as configured in ALARM CAMERA CYCLER in the ALARM I/O menu.
MULTIVIEW - Invokes the video output to display MULTIVIEW for the period of the alarm. See multiview setup in the VIDEO OUTPUT menu for camera number/layout.
IMG->EMAIL - Initiates the X300 to email a snapshot image of the specified camera. See the SMTP EMAIL menu in EXTERNAL SETTINGS for email configuration.
CURRENT STATE – Shows the current OPEN / CLOSED state of each of the 4 alarm inputs. The corresponding number for each alarm input will be highlighted for CLOSED and not highlighted for OPEN.
EMBED ALARM STATE MENU - Text can be embedded into recorded images using the EMBED alarm state menu. 8 user defined characters can be entered per input and positioned either top or bottom of the image. The text will display on the footage for the duration of the alarm, plus any post alarm duration. The text will be embedded on all camera views simultaneously and will appear on all selected cameras during playback in PCLink200.

If a recording mode is used as an alarm function, the settings are as per the settings in the relevant recording mode menu e.g. If NORM REC is selected, the settings in NORMAL RECORDING are used.

This menu sets the conditions for the Alarm outputs. This determines whether the X300 alarm output goes closed or open when any of the set conditions are met. The X300 has three outputs; LED1 (LD1), LED2 (LD2) and ALARM OUT (ALM).

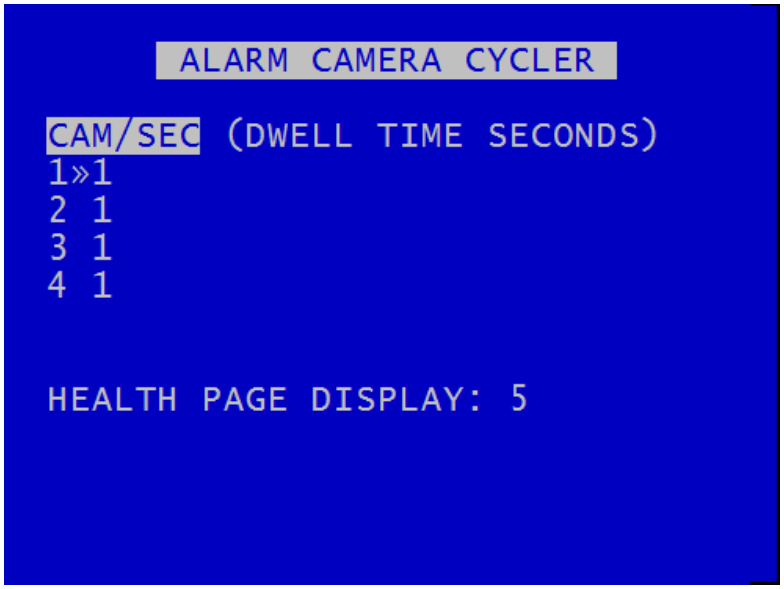
ALARM OUTPUT CLOSED/OPEN **WHEN…**

TEST OPEN/CLOSED	- Sets the input to OPEN/CLOSED for testing purposes.
ALARM OCCURRED	- An ALARM event has occurred.
RECORD LED	- The front panel record LED is active.
DISK LED	- The front panel disk LED is active.
CAM LED	- The front panel camera LED is active.
FAIL LED	- The front panel fail LED is active.
SERVICE LED	- The front panel service LED is active.
FRONT LEDS	- Any of the front panel LEDs are active.
MOTION DETECTED	- Motion is detected.
CAM DISCONNECTED	- Any camera is disconnected.
GSENSOR TRIGGER	- Any of the XP200 GSensor configured thresholds are reached / exceeded.
LAN ACTIVE	- Files are being transferred via the LAN interface.
HD WP %	- A percentage of the hard disk cartridge contains Write Protected files: 25, 50, 60, 70, 80, 90 and 100%.
HD FULL %	- A percentage of the hard disk cartridge if full; 25, 50, 60, 70, 80, 90 and 100%.
IMG->GSM	- When the Image Transfer feature is triggered; the LED output will turn on during the dialling process, flash during data transmission and turn off when complete/ready for next transmission. The only addition to this is that the Service LED will illuminate on a failed transmission (after the re-try process). See REMOTE SETTINGS and ALARM INPUT for further details.
AUDIO VOR	- Voice Operated Recording. If the detected level of audio input reaches a certain percentage (25%, 50%, 75%) the alarm output can be triggered (using ALARM OUTPUT **3**). If using this trigger as an alarm *input*, a wire link will need to be in place on the X300 rear panel green block (see rear panel for wiring pinout). If the VOR output is being used as an alarm input to trigger recording, it can only be used to trigger ALARM recording mode. Example setup of VOR;

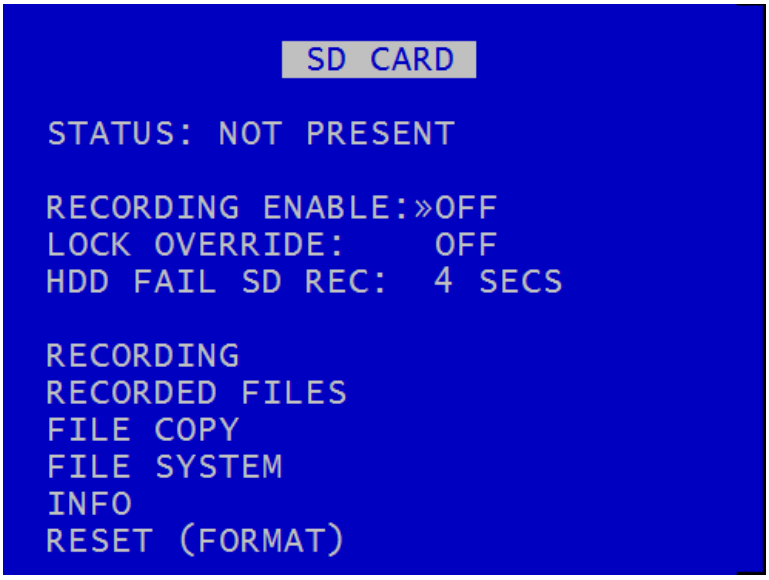
1. ALARM OUTPUT: ALM, CLOSED, AUDIO VOR 75%
2. ALARM INPUT: LD1, CLOSED, FUNCTION – ALARM REC, CAMS 1

The above example assumes that there is a wire link on the green block between ALARM OUT and ALARM IN1. The POST TRIGGER time can also be set to record for x seconds after the audio trigger has finished.

ALARM CYCLER



The ALARM CAMERA CYCLER function can be used as a test/auditing function to cycle through the cameras and health page. Set the ALARM input function and attach an external trigger then setup how many seconds the CAMER CYCLER ALARM function will dwell on each camera and HEALTH PAGE before returning to the SWITCHER function.



The X300 supports a single SD card for two functions;

SD CARD RECORDING - The X300 can be configured to record up to 25 images per second to the SD card in addition to the primary images per second being recorded to the cartridge. All additional data for example Audio and GPS are also included within the SD recorded files.

FILE COPY - Files that are recorded on the X300 cartridge can be selected and copied to the SD card for review on a PC. See next page for details.

The SD Card menu shows the current Status of the SD card i.e. PRESENT, NOT PRESENT or RECORDING TO SD.

LOCK OVERRIDE can be used to override the physical lock status of the SD card. For example if an SD card is inserted with the lock enable, this usually prevents any data being written, however the X300 can override this.

HDD FAIL SD REC – sets the number of seconds the SD card will record for once a Hard Disk write fault has been detected (before the X300 reboots in order to re-try the HDD).

An SD INFO page includes details such as; Size, % used, SD serial number etc.

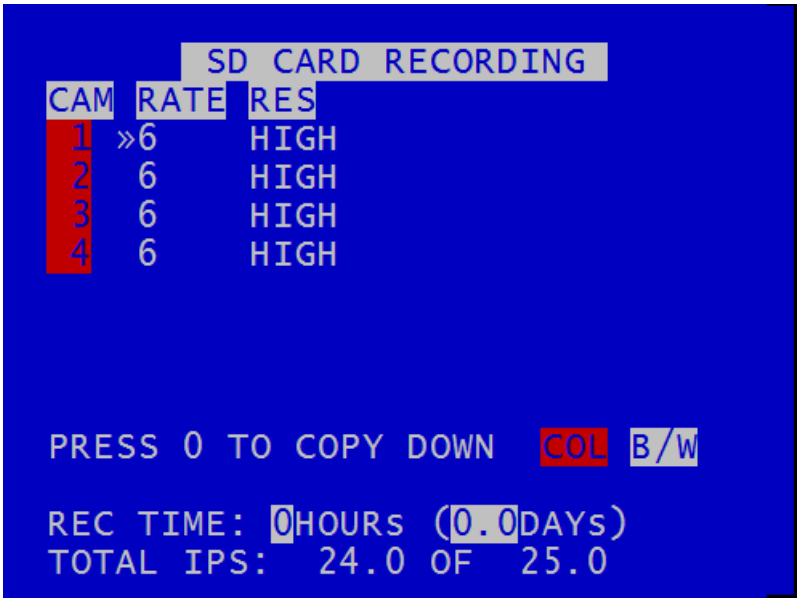
Within the SD card RESET menu, DELETE ALL RECORDING FILES will remove all recordings from the SD card including write protected files. Only do this if you want to completely remove all recordings – there is NO undo option. Press the right menu button to go to a warning screening, press right again to carry out this action. Pressing Menu Exit will abort this procedure.

SECURE DISK WIPE will permanently delete all recording files on the SD card This should only be used if files need to be completely destroyed. NO files will be able to be recovered. A final warning message will appear before this function is carried out. Pressing Menu Exit will abort.

The DELETE ALL RECORDINGS and the SECURE DISK WIPE are the same functions found in the main RESET menu for the X300 cartridge.

SD FILES menu displays a list of the files on the SD card. The files cannot be played back on the X300. Navigation of the file list pages are via the left/right arrow keys when FIRST/LAGE page is highlighted. Files can be write protected by scrolling down to the file and pressing the left arrow key, a W should appear next to the file. Pressing left again will remove the write protect.

A link to the main cartridge HDD files give quick access to see what is on the cartridge. Some SD stats are given to aid in the select process e.g. size and capacity used.

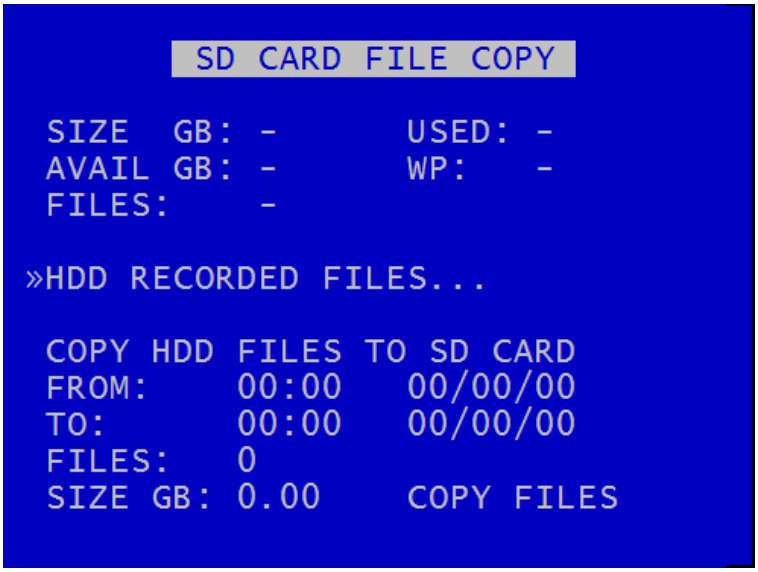


SD CARD RECORDING - The X300 can be configured to record up to 25 images per second to the SD card (regardless of PAL/NTSC video standard) in addition to the primary images per second being recorded to the cartridge. All additional data for example Audio and GPS are also included within the SD recorded files.

Images per second can be set independently per channel however the Resolution is set based on the X300's primary mode of recording e.g. if the X300 is Normal Recording with a RES of SUPER, the SD recording files will also be SUPER. If the X300 changes mode for example from Normal to Alarm recording, and the RES is set differently in Normal and Alarm, the SD files will follow the change and record the RES of Alarm recording for the period it is active.

Modes of recording;

- OFF – SD recording is OFF, no SD recording.
- ON – SD recording onto SD card all the time.
- IF Normal Rec – SD recording only occurs if the X300 is recording in Normal/Alarm modes. This SD mode mimics the Normal/Alarm behaviour of the X300.

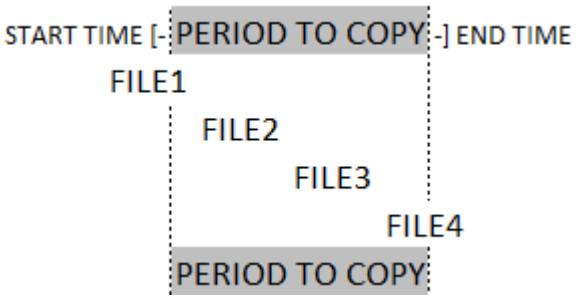


FILE COPY is used to copy recorded files from the X300 cartridge to the SD card.

Enter the start/end date & time of the period you wish to copy and then move the cursor down to COPY FILES.

If there is enough free capacity on the SD card, the copy will begin. Progress of the copy will be displayed as a percentage and incremental file count as each file is copied.

If the period requested spans multiple files, all files are copied to the SD card for that period. Files are not cut / clipped. In the following example, all four files would be copied, even though files 1 & 4 only include a portion of the period requested;



SHOT RECORDING

This menu controls the configuration of single/multi shot recording.

Shot recording allows a defined number of shot (images) to be recorded from an alarm input. Shot recording occurs the instant the alarm becomes active. The duration of the alarm input signal does not affect shot recording in any way.

Set the relevant alarm input function to SHOT REC using the ALARM INPUT MENU… link and then select the camera that the images will be taken from.

Set the RESOLUTION, number of SHOTS and the number of IMAGES PER SECOND required.

Motion Detection is used to monitor defined areas for levels of motion above a defined threshold and then to trigger the X300 recording modes; Normal, Timer or Alarm (set as YES/NO).

CAMERA SETUP allows a selection of cameras to be monitored by the motion detection system. Cameras that are OFF are ignored by motion detection. The PERCENTAGE is used to set the level of change that must occur between successive frames to produce a motion event. The DURATION is the number of consecutive motion events that must occur to trigger the motion system.

MASK VIEW/EDIT allows the area of each camera to be defined using a moveable and variable size box cursor. **NB** Any areas you set to be included/excluded will be saved to the X300 and maintained even after a reboot. The on screen cursor however will default in the middle of the MASK VIEW/EDIT camera view after each reboot. The stop key is used to switch the select box between GREEN, RED and BAR GRAPH modes;

When the GREEN box is shown;	0 key	- activate/include area (camera view is clear).
When the RED box is shown;	0 key	- deactivate/exclude area (camera view is greyed out).
When the BAR GRAPH is shown;	0 key	- reset red maximum marker to zero
	Up/Down	- increase/decrease PERCENTAGE
Menu keys move / size the box;	Play key	- increase box width
	Wind key	- increase box height
	Back key	- decrease box width
	Rewind key	- decrease box height

Once the selection area is of the correct size, pressing the 0 key will mark the area as included/excluded. This must be done if you are including areas. Multiple areas can be defined. Excluded areas are greyed out. By default when the camera view is first selected for masking, the entire view is activated and is therefore included in motion detection.

ARMING DELAY - is typically used to allow the operator to exit a monitored area without triggering.
POST TRIGGER - specifies the duration of recording after motion has ended; 5seconds – 2hours.
SMS MESSAGE - On a motion detection trigger, select which SMS to be sent; 6 user defined.

When in detect mode, the RECORD LED will ***flash*** on and off. When motion is triggered, the LED will remain solid for the duration of motion plus post trigger time, then return to flashing.

Quick setup
– Set the camera(s) you wish to monitor to ON.
– Set the camera(s) sensitivity using PERCENTAGE & DURATION.
– Move / Size the cursor box and press 0 to deactivate any unwanted areas.
– Select the mode of recording you wish to trigger e.g. NORMAL.
– Press record.

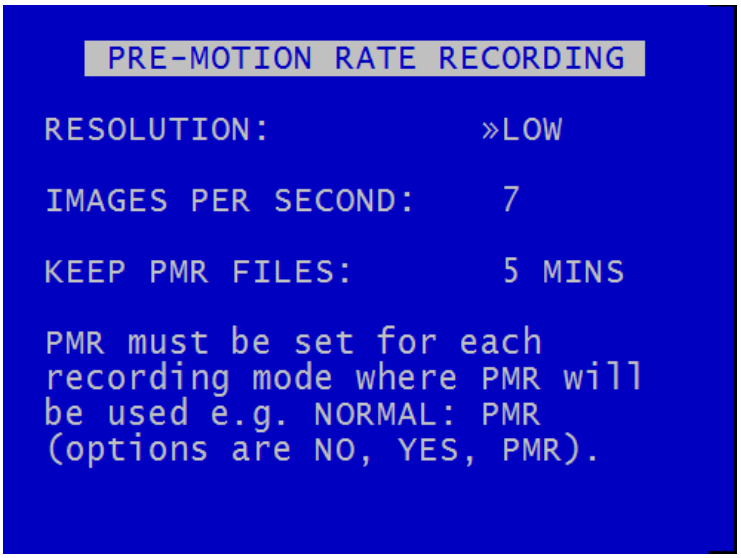
If any individual camera is set to **OFF** in the CAMERA SETUP, it will not be controlled by motion detection even if the record mode is set to **YES** within the motion detection menu.

Example, if:

NORMAL RECORDING is set to record on cameras 1 – 4
NORMAL RECORDING is set to YES in MOTION DETECT MENU
Cameras 1 & 2 are set to YES in MOTION DETECT CAMERA SETUP
Cameras 3 & 4 are set to NO in MOTION DECTECT CAMERA SETUP

then; normal recording will be constant on cameras 3 & 4. Cameras 1 & 2 will only record when motion detection is triggered (for the duration of motion plus the post-trigger time).

PRE-MOTION RATE RECORDING


PRE-MOTION RATE RECORDING
RESOLUTION: »LOW
IMAGES PER SECOND: 7
KEEP PMR FILES: 5 MINS
PMR must be set for each recording mode where PMR will be used e.g. NORMAL: PMR (options are NO, YES, PMR).

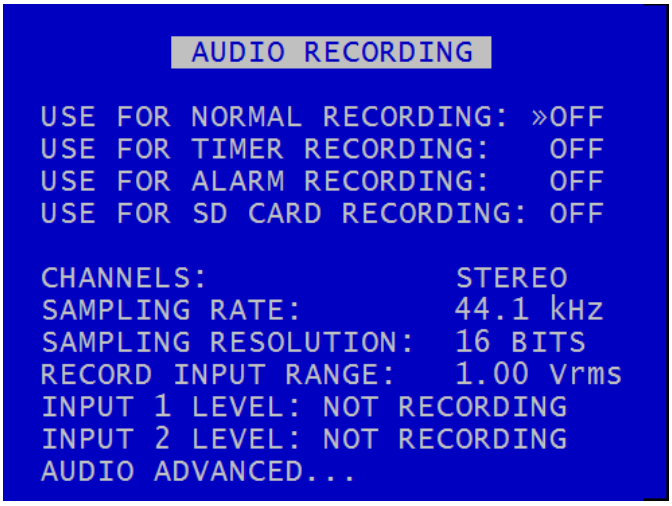
PRE-MOTION RECORDING (PMR) - Pre motion recording feature enables a user to configure the X300 to record files at a lower IPS during non motion periods, then increase the IPS when recording is triggered by motion. In this instance, a file may consist of low ips, then higher ips, then low ips footage as the motion trigger is set on/off.

When PMR is active, the RECORD LED will be on continuously.

Within the MOTION RECORDING menu, PMR must be set for each recording mode where PMR will be used e.g. NORMAL:PMR (options are NO, YES, PMR). X300 recording priorities still apply i.e. Alarm takes over from Normal, even when motion or PMR is set.

SMTP MESSAGE - If motion is detected, send an SMTP Email with a camera snapshot image as per settings in the SMTP EMAIL menu in EXTERNAL SETTINGS.

AUDIO RECORDING


AUDIO RECORDING
USE FOR NORMAL RECORDING: »OFF
USE FOR TIMER RECORDING: OFF
USE FOR ALARM RECORDING: OFF
USE FOR SD CARD RECORDING: OFF
CHANNELS: STEREO
SAMPLING RATE: 44.1 kHz
SAMPLING RESOLUTION: 16 BITS
RECORD INPUT RANGE: 1.00 Vrms
INPUT 1 LEVEL: NOT RECORDING
INPUT 2 LEVEL: NOT RECORDING
AUDIO ADVANCED...

This menu allows configuration of the audio recording parameters. Audio can be enabled or disabled (ON / OFF) for the following recording types; Normal, Timer and Alarm. The X300 can be configured to record audio from a single (mono) channel input or two (stereo) audio inputs. The X300 inputs are line-level therefore some microphones will require the use of a dedicated preamplifier.

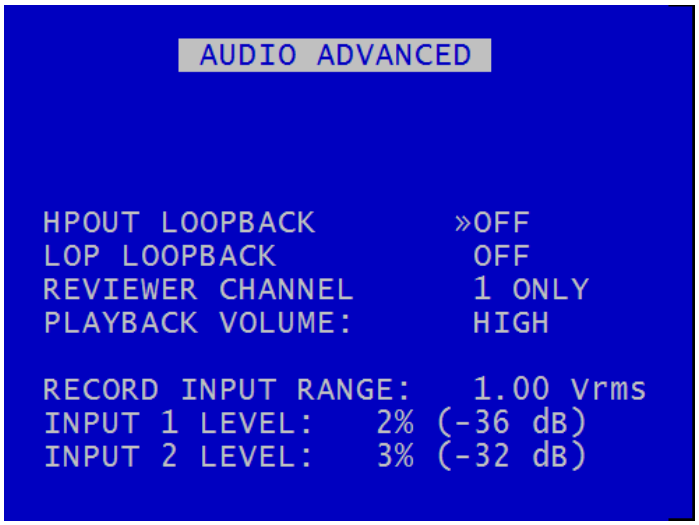
The X300 is configurable so that the line-level input range can be set from 0.12 - 2.0Vrms (sensitivity). When recording, the INPUT LEVELS will be shown as a percentage so the X300 can be setup to avoid clipping. The sensitivity configuration will be dependent on the environment of the installation.

The X300 samples at the following kHz RATES; 8, 16, 32, 44.1kHz (CD quality) and 48 kHz. Changing the RATE will affect the X300 recording time before the cartridge loops and begins overwriting the oldest footage. Resolution is fixed at 16bits.

Individual audio channels can be played back using PCLink200 PC software. Playback via the Reviewer is in mono via channel 1 only (Left). Playback volume of the Reviewer's built in speaker can be adjusted between; MUTE, LOW, MEDIUM, HIGH, FULL.

AUDIO ADVANCED has two functions are both for testing the output of the incoming Live audio feed:

HPOUT LOOPBACK - High Power Output, for listening to Live audio using the speaker on the Reviewer.
LOP LOOPBACK - Line Output, for listening to Live audio using the rear panel audio out.
REVIEW CHANNEL – The X300 has two audio inputs however the Reviewer only has one audio output. This function is used to switch the live/playback output channel between 1, 2 or BOTH.


AUDIO ADVANCED
HPOUT LOOPBACK »OFF
LOP LOOPBACK OFF
REVIEWER CHANNEL 1 ONLY
PLAYBACK VOLUME: HIGH
RECORD INPUT RANGE: 1.00 Vrms
INPUT 1 LEVEL: 2% (-36 dB)
INPUT 2 LEVEL: 3% (-32 dB)

Lists the recorded files and allows the user to select a file for playing or to change the write protect state of a file.

Files are shown in chronological order, most recent file first. Files are displayed by;

HH:MM:SS DD/MM/YY SIZE MB

File status indicators include;

A - Alarm
W - Write protected
M - Motion detection
P - Motion detection (pre trig)
S - Shot
G - GSensor

A file may have multiple statuses. For example a write protected alarm file that was triggered by motion could have; A W M _ _

A file with a W status will not be overwritten on Loop Recording. The W status can be added or removed by pressing the Left key when the cursor is next to the recorded file.

Navigation

First / Last page;

Left key - go to last page
Right key - go to first page

Page;

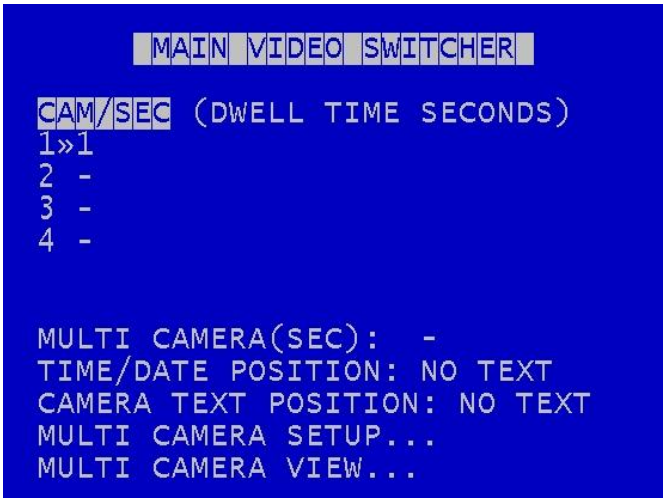
Left key - go to next page
Right key - go to previous page
Up/Down keys - move cursor to a file
Right key - play file

FILTER ON/OFF - The recorded files list can be quickly filtered in order to display *only* a certain file type e.g. only those that are **A**larm files.

VIDEO OUTPUT

These menus control the automatic switching and dwell time of cameras on the MAIN video out (X300-04 and 16 channel) and the AUX video out (X300-16 channel only). When selecting the VIDEO OUTPUT menu item from the MAIN MENU the X300-04 will display the menu below. The X300-16 has an additional AUX video output and will display the above so that both outputs can be configured.

MAIN VIDEO SWITCHER



Set the desired camera DWELL time (in seconds) next to each camera that is to be included in the switcher sequence. Set the MULTI CAMERA dwell time as required.

TIME/DATE POSITION - Screen text can also be displayed on the output and includes the current date & time and if the X300 is recording. Set the position of the screen text accordingly. **NB** this does not effect the date/time being recorded into the images; that is set in SYSTEM SETTINGS > CAMERA OPTIONS.

CAMERA TEXT POSITION - sets the position of Live camera text e.g. CAM1 could be "FRONT ENTRANCE". This is useful for operators who are monitoring the camera outputs.

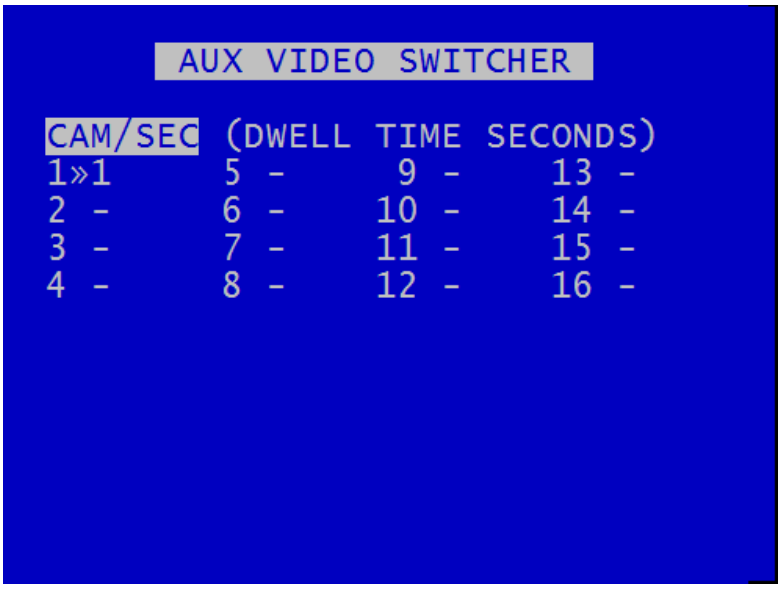
Multi camera view allows the simultaneous viewing of a number of cameras at the same time. The output is split into tiles per camera (4 or 16 depending on model). Multi view can be included in the Auto switching sequence.

Pressing the Auto key on the Reviewer will switch the video output between the configured cameras for the set period of time. Single camera output is selected by pressing the camera number on the Reviewer.

MULTI CAMERA SETUP; Configures which cameras are to be displayed simultaneously.

X300-04; each tile can be set to display a quarter view of a camera.
X300-16; each tile can be set to display a sixteenth view of a camera. If the same camera number is set to four tiles in a square then a quarter view will be shown.

MULTI CAMERA VIEW; displays multi camera output as per the current settings.



AUX video out (X300-16 only) provides a secondary switcher output for video only. Multiview and screen text are not available for this output. Switcher is configured in the same way as for MAIN out.

Time and Date settings can be set here. Summer time adjustment can be selected for UK, EUR and USA.

The current time/date is displayed. Enter new values using keys 0-9. To set the new time/date select;

SET CLOCK TO THESE SETTINGS

The date display MODE can be switched between DD/MM/YY and MM/DD/YY. Format will be used for date entry and display throughout the system.

LAN/WLAN TIME ADJUST allows the system to accept broadcasts over a LAN/WLAN to adjust its time. Time adjust network port can be configured in the External Settings > LAN menu.

Summer time adjust automatically updates the system to daylight saving time, valid for the country selected.
Adjustments are applied even if the system was powered off during the time change.

When the clock is put forward, the time is now summer time, which is winter time +1 hour. When the clock is put back, time reverts to winter time.

UK - At 1am on the last Sunday in March, the clock is put forward an hour. At 2am on the last Sunday in October, the clock is put back and hour.

CENTRAL EUROPE - At 2am on the last Sunday in March, the clock is put forward an hour. At 3am on the last Sunday in October the clock is put back an hour.

USA - At 2am on the second Sunday in March, the clock is put forward an hour. At 2am on the first Sunday in November, the clock is put back an hour.

Individual text for each camera can be inserted above the timestamp. 12 user defined characters can be inputted per camera.

A duplicate text feature is available for copying down text from camera 1 to all remaining cameras.

The timestamp can be positioned either below or above the main area of the recorded image and fine adjustment of position made with LOW/MIDDLE/HIGH settings. The timestamp can also be turned off and will not be written in to the recorded images.

Video Settings is used to control the video standard i.e. whether the unit is to operate with PAL or NTSC cameras. **NB** After changing the video standard setting, a power-cycle is required before the change comes into effect.

CAMERA DISCONNECT TIME - allows disconnected cameras to be reported as connected for a set period of time. This is useful in cases where a camera can take a while to boot and send its signal. If there is no signal after the timeout, the camera is treated as disconnected and is flagged in the service log.

Text input on the Reviewer is similar to a mobile phone keypad. For example pressing **1** multiple times will sequence through **A B C 1 (blank)**.

See the text input section under X201 Reviewer for full character map.

Sets the parameters of the file system and how files are laid to disk. RECORDING MODE sets either LOOP RECORD (oldest files will be overwritten first when the hard disk cartridge is full) or SINGLE PASS recording (recording will stop when the hard disk cartridge is full).

FILE LENGTH controls how often a new file is created. A new file is created each time recording starts. The file will be named with the date/time when the recording started. If continuous recording, the next file will be started as per the file length settings or when next time boundary is met. For example when using 10min files, if recording starts at 10:03, the first file will contain 7minutes of video and the second file will be started at 10:10, then every 10 mins after a new file will be created. Files can be configured for; 5 min, 10 min, 1 hour or Unlimited. For unlimited, a new file will be created when it reaches 4GB in size (limited by the X300 FAT file system).

FILENAME TEXT prefixes the recording files with up to 12 user defined characters (0-9, A-Z, space).

WRITE PROTECT ALARM REC selects whether alarm recording files are write protected. If alarm files are write protected they will not be deleted on LOOP recording.

WRITE PROTECT SHOT REC selects whether shot recording files are write protected. If shot files are write protected they will not be deleted on LOOP recording.

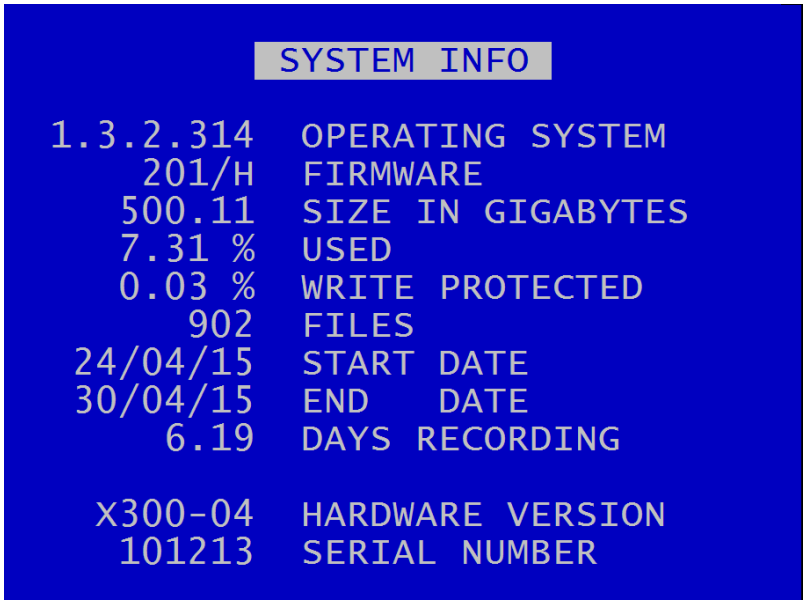
FILE PASSWORD PROTECTION - a four digit password can be setup to protect files from unauthorised playback using PCLink. PCLink will prompt for the file password in order to playback the file in Windows. **NB** - there is no master unlock for this feature so passwords must be very carefully managed.

FILE SYSTEM CHECK menu configures whether the file system is checked (and possibly corrected) at power up and also if a system log is created.

ON POWER SIWTCH ON: QUICK, FULL or NO check can be selected. Quick is default (and recommended).

PERFORM CHECK ONLY NOW will check the files and file system and report any errors but will not attempt to fix anything.

PERFORM CHECK AND CORRECT NOW will perform a file and file system check and fix any errors that are found. It also rewrites the FAT and BOOT sectors. **NB** No XBA files/data are deleted during this function.



Displays information about the system;

OPERATING SYSTEM – Currently installed/running software version.

FIRMWARE – Currently installed/running firmware version.

SIZE IN GIGABYTES - Total size of installed hard disk cartridge.

USED - Percentage of hard disk cartridge used by any files.

WRITE PROTECTED – Percentage of cartridge used by write protected files.

START DATE - The date of the first (oldest) file on the cartridge.

END DATE - The date of the last (newest) file on the cartridge.

DAYS RECORDING - The number of days between the start/end date. **NB** that there may not be continuous recording files between the start/end date.

HARDWARE VERSION - The model number of the DVR.

SERIAL NUMBER - Displays the X300 serial number.

PASSWORD

A password can be set to restrict user access to four key areas of the system. A readonly access can be set that allows view and limited features to be used.

RECORD - If set to yes, the record button on the front panel and the reviewer are password protected.

MENU - If set to yes, access to the menu system is password protected.

SWITCHER - If set to yes, the button to activate auto switcher mode is password protected.

PLAY - If set to yes, the controls to review recorded footage are password protected.

READ ONLY - If set to yes, the user cannot change any setting on the X300. The menu system can be browsed, files played, playback controls, search function and check & correct used but no settings changed. If a setting change is attempted, the element will flash in RED for 2 seconds and not be changed. To exit read only mode, change read only to NO, at which point you will be prompted for the password.

If access to a password protected function is attempted the user is prompted with the enter password screen. On correct password entry the password protection is temporarily disabled whilst that function is being used.

Password can be changed by first entering the current password, followed by the new one (entered twice for verification). Password format is four digits only 0-9.

Default password is **0000** (four zeros).

In the event of a complete password lockout, contact your installer or Timespace for a master unlock code; support@tspace.co.uk

NB – The SWITCHER password protection feature is not supported whilst in PTZ mode. This is due to PTZ owning the video output function. Disable the switcher password in the SETTINGS MENU > SYSTEM SETTINGS > PASSWORD menu by setting SWITCHER to **NO.**

FTP/TELNET USERS - Three different remote user access accounts exist and the passwords can be changed for each as required. The usernames cannot be changed. Passwords can be alpha numeric, lower and upper case (case sensitive).

POWER OPTIONS

If the X300 detects that its power source has dropped down to 7.5V, recording will be stopped in order to preserve the latest recording file and the file system. It is a low power file protection.

NB if this option is set to NO and the power does reach less than 7.5 recorded files cannot be guaranteed. This is a useful feature where batteries are being used to power the X300 and over time their output declines.

DELETE ALL RECORDING FILES will remove all recordings from the hard disk including write protected files. Only do this if you want to completely remove all recordings – there is NO undo option. Press the right menu button to go to a warning screening, press right again to carry out this action. Pressing Menu Exit will abort this procedure.

SECURE DISK WIPE will permanently delete all recording files on the hard disk. This should only be used if files need to be completely destroyed. NO files will be able to be recovered. A final warning message will appear before this function is carried out. Pressing Menu Exit will abort.

Three User Profiles can be configured with different settings for different uses or recording modes. This gives the user an easy way of quickly switching between types of recording required without having to setup the X300 each time. Each profile can be named individually.

In addition to the three user profiles, the X300 Default settings can be loaded.

Use the PROFILE: selection to choose between DEFAULTS and USER 1-3. Then select LOAD PROFILE to load those settings.

SAVE PROFILE will write the currently loaded settings back to the flash memory, using the selected PROFILE name.

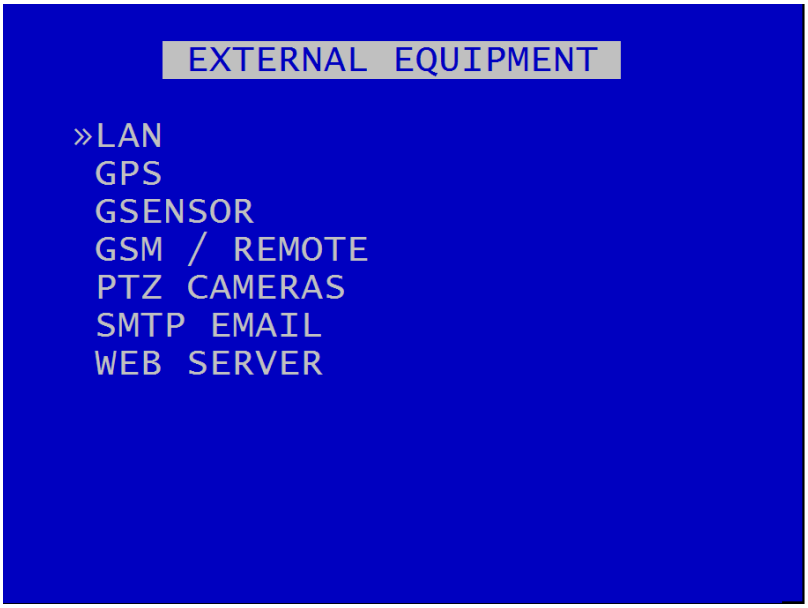
Example; User sets up NORMAL recording with 2 cameras on D1, SUPER resolution. Go to the RESET menu and overwrite USER 1 with *"2CAM D1"*, then change the PROFILE to *2CAM D1* and select SAVE PROFILE. Change settings for MOTION detect on 1 camera, then overwrite USER 2 with "*1CAM MOT*", change the PROFILE to *1CAM MOT* and select SAVE PROFILE. You now have 2 user defined profiles to easily switch between by LOADING the specified profile.

MENU LANGUAGE can be set between ENGLISH (default) or FROM DISK. When FROM DISK is selected, the X300 will load a language file from the cartridge with MENU and HELP text translated into a given language. The language template is pre loaded to the cartridge by the user at the point of installation. The language file will not be removed when running DELETE ALL RECORDING above. A power cycle is required before the new language settings will take effect.

Save up to 3 of your most common settings using the USER PROFILES to allow quick switching between different types of recording mode for different installations. E.G;

USER PROFILE 1 - Normal record 2 cameras with audio.
USER PROFILE 2 - Motion detect 1 camera with SMS alert.
USER PROFILE 3 - Alarm record 4 cameras based on an external input.

EXTERNAL EQUIPMENT



The X300 provides some common interfaces so that external equipment can be connected and configured for use with the DVR. For example;

LAN RJ45 Ethernet socket for hard wiring a network cable, linking to a Wifi bridge or 3G router.

9 pin D-type Serial connector for wiring a GPS unit, GSM modem, GSensor or other equipment to take advantage of the X300 RS232 commands.

Allows the user to change the parameters of the LAN system. LAN STATUS indicates whether the X300 is currently connected to a LAN or not.

IP ADDRESS - Enter static (fixed) IP address that the X300 is to be assigned on the local area network. The default ip address is **10.0.0.200**

SUBNET MASK - Enter the subnet mask as applicable for the LAN the X300 is connected to. The defaults is 255.255.255.0

GATEWAY - Enter the gateway IP address of the default gateway the X300 will communicate with on the LAN.

DNS PRIMARY/SECONDARY - Enter the Domain Name System server address that you wish to use. Defaults to Google's primary/secondary.

DHCP - Enables/disables automatic IP address allocation. If there is a Dynamic Host Configuration Protocol server/router on the network it will assign an IP address to the X300, else assign it manually and turn this feature off.

PING TEST - Enter a destination IP address to send a network packet to for testing connectivity.

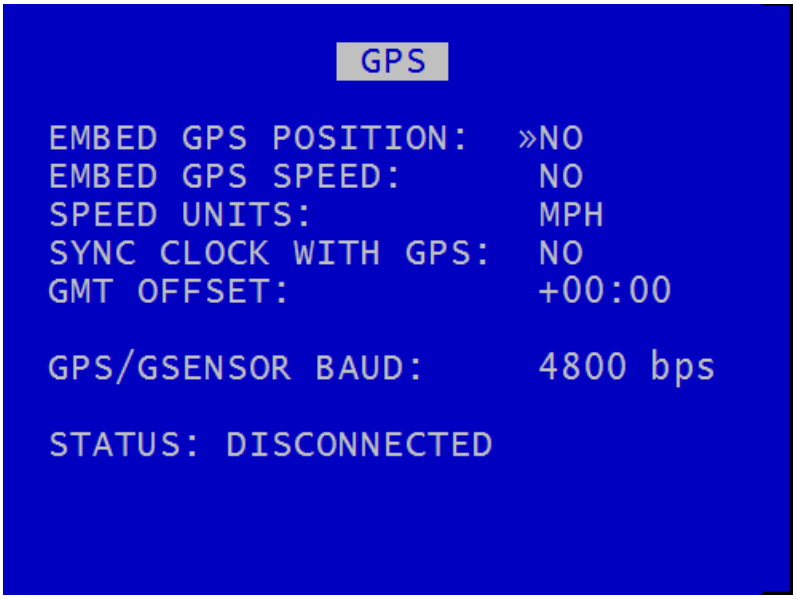
BYTES SENT / RECEIVED updates in real-time to show how many bytes are being transferred to and from the X300.

RECORD DURING TRANSFER allows or disallows the X300 to record whilst LAN transfer is taking place. If set to YES, then the X300 will continue to record during transfer. If set to NO, recording will stop during transfer and return to the previous recording mode after transfer.

LAN IDLE TIMEOUT - Sets the number of minutes after the last LAN activity an ALARM output will stay active for. This timeout is to be used in conjunction with the ALARM OUTPUTS.

TIME ADJUST PORT configures the network port number that the X300 will listen for time adjust broadcasts.

MAC is the unique hardware identifier for the network interface on the X300.



Global Positioning System serial connection setup menu.

The X300 can receive GPS data through the serial port and embed the data into recorded images. GPS data includes positioning and speed and users can optionally turn these on or off. Then turned on, the data will be recorded with each image.

The X300 is compatible with the standard NMEA-0183 GPS protocol. A suitable GPS serial unit can be wired to specific pins on the X300 serial port (see X300 user manual for further information / wiring diagrams).

EMBED GPS POSITION - When set to YES will embed the position information in recorded images.

EMBED GPS SPEED - When set to YES will embed the speed information in recorded images.

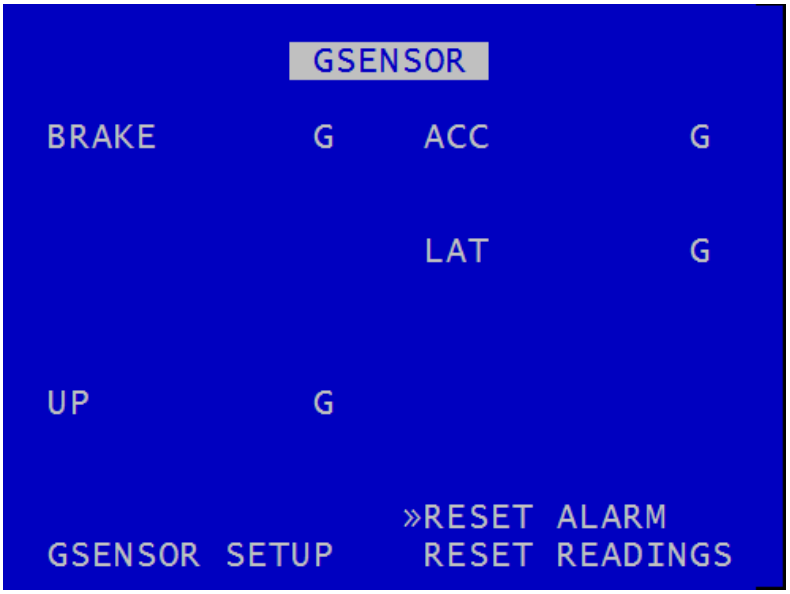
SPEED UNITS can be set for miles per hour (MPH) or kilometres per hour (KPH).

SYNC CLOCK WITH GPS - The X300 can be configured to synchronize the clock with the data and time information received from the GPS unit. When set to YES the X300 will synchronize the clock on power up.

GMT OFFSET – When syncing with GPS time outside the UK, it is necessary to set the GMT offset for the country / region that the X300 is in, +/- to GMT.

GPS/GSENSOR BAUD set the baud rate at which the X300 will communicate with the GPS and the XP200 GSensor (when using both a GPS and the XP200 the baud rate must be the same). A reboot of the X300 may be required when changing the baud rate in order to detect the GPS unit.

STATUS indicates whether or not a GPS unit has been detected. The status will be DISCONNECTED if not unit is detected, TRACKING SATELLITES if connected but no GPS lock has been established yet and if CONNECTED, GPS data/coordinates will appear.



Timespace XP200 Accelerometer settings menu.

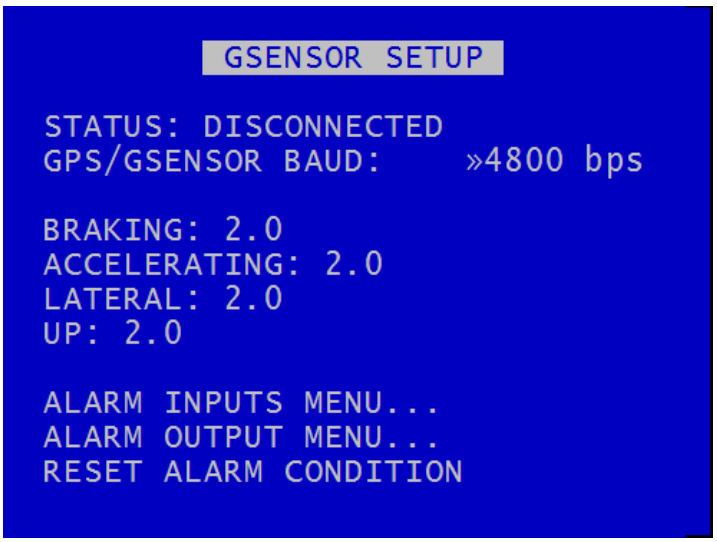
The XP200 is a GSensor device that provides X, Y and Z axes data to the X300 via the serial port. Data is displayed and recorded into each image along with optional GPS data.

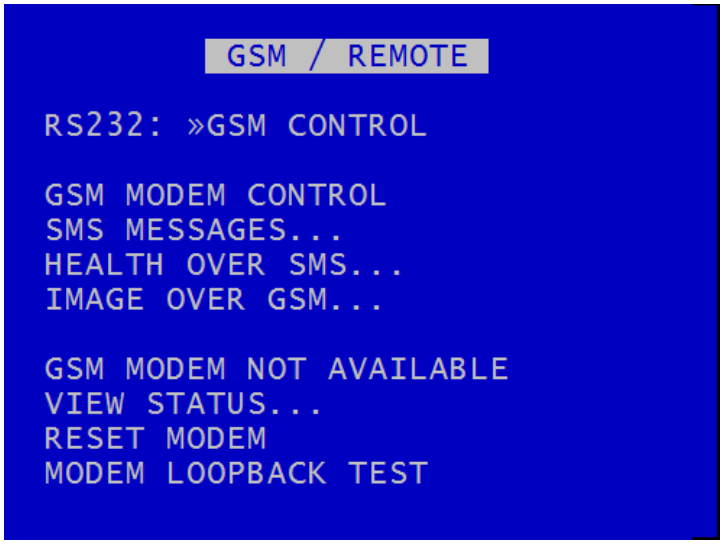
GSensor readings are displayed for;

BRAKE	- Measurement of decreasing forward motion.
ACC	- Measurement of increasing forward motion.
LAT	- Measurement of lateral movement.
UP	- Measurement of upwards motion.
RESET READINGS	- Clears all current readings within this hour.
RESET ALARM	- Clears the alarm condition.

Within the GSensor setup menu the connection status is shown as well as the communication baud rate. The baud rate can be changed here but must match the GPS baud rate (if using GPS).

GSensor threshold triggers can be configured from 0.1 - 2.0. If the set value is exceeded an alarm can be raised (used in conjunction with alarm outputs). A link to both the Alarm input and output menu gives quick access to configure the required action.





Settings for the serial port behaviour can be configured here to either communicate with a GSM modem or other external equipment.

RS232:

GSM CONTROL - Set port to send/receive data to a modem.
BAUD RATE - Set port to a baud rate to communicate with external equipment

The X300 supports a token based command structure so that it can be integrated and controlled by 3rd party applications. A selection of data rate is available for external control: 2400, 4800, 9600, 14400, 19200, 38400, 56000, 115200. See RS232 EXTERNAL CONTROL section of the manual.

SMS messages can be setup and triggered by the X300.

VIEW STATUS gives statistics of SMS messages sent/received as well as calls and image transfers. Using the RESET MODEM function will clear the statistics and send a modem reset command to the GSM modem.

With a special test plug fitted on the modem port, it is possible to LOOPBACK test and confirm the hardware is functional.

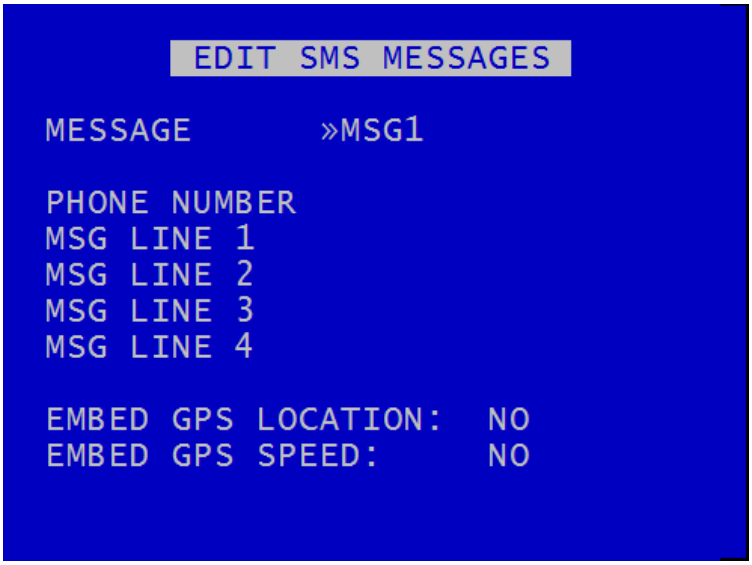
SEND SMS - select when to send an SMS message;

NEVER	- Never.
DAILY	- At midnight every day.
WEEKLY	- Every Monday (at midnight)
MONTHLY	- On the 1st of every month (at midnight).
POWER UP	- When the X300 powers up

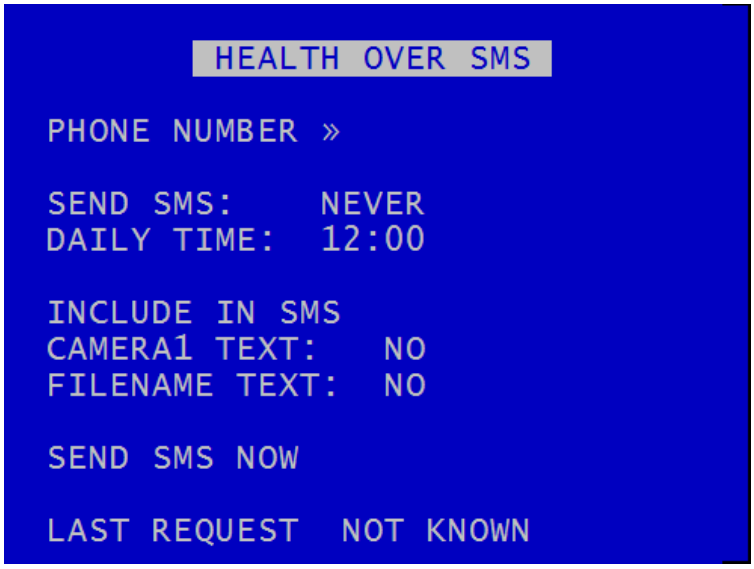
This maybe useful as a test to let you know the X300/Modem is still on and functioning. It is also useful to keep alive a prepay SIM card as some timeout due to inactivity (subject to mobile operator rules).

SEND SMS NOW - Test the GSM/SMS connection by sending a message using one of the six configured messages.

Six different SMS messages can be configured with different text and recipients. Four lines of text can be inputted and additionally GPS location and speed can included in the SMS.



HEALTH OVER SMS



HEALTH OVER SMS will send the X300 health status including recording state, last recorded file, camera status/faults, disk service conditions, GPS location and serial number.

The feature can be setup to send an SMS at a scheduled time or if queried by an incoming SMS. The incoming SMS must only include the words “SEND SMS NOW” and will then send an outgoing SMS to the phone number as configured in the menu settings.

SEND SMS selects when to send an SMS message. Select between NEVER, AT DAILY TIME and POWER UP.

DAILY TIME - Specify the daily time the SMS message is to be sent when AT DAILY TIME is selected on the menu.

PHONE NUMBER - Mobile number to send SMS health message to.

INCLUDE IN SMS - Set these options to YES to include the specified information in the SMS message.

SEND SMS NOW - Send a health message to the phone number specified now. **NB** The SEND SMS NOW option cannot be invoked if connected to the X300 via RemoteLink using the GSM modem connection. If this option is invoked, the RemoteLink connection will be dropped and no SMS will be sent.

The message contains:

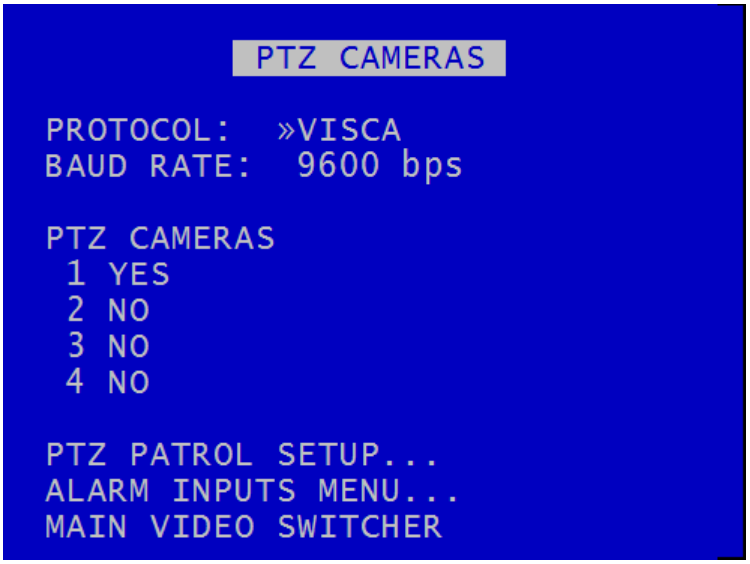
1. Type or reason for health SMS
2. Sending unit info
3. GPS info
4. Camera info
5. Time info
6. LED info
7. Service log info (which may be related to service/fail LED):

See APPENDIX 1 – HEALTH SMS MESSAGE FORMAT for further details on how to read the messages and integrate with other systems.

IMAGE OVER GSM can transmit a single image by dialling out using a connected GSM modem to a PC running Timespace ImageLink application.

Image over GSM can be triggered via an alarm input, which will initiate the X300 to transfer the image, GPS location and other unit specific info.

Reference PCLink Suite manual for IMAGELINK and IMAGELINK Server application details.



The PTZ menu allows control over a Pan, Tilt, Zoom camera when connected to the X300's serial port. An RS232-to-RS485 convertor will be required – example converter; **EXTERNAL LINK, Farnell code; 1683075.**

Supported PTZ protocols are; Pelco D, Pelco P and Vicsa (Sony).

A selection of baud rates are available for the cameras: 2400, 4800, 9600, 14400, 19200, 38400, 56000, 115200. This baud rate setting is linked to the baud rate under the GSM / REMOTE SETTINGS menu. Only one of GSM or PTZ can be used at a time. Please refer to the Camera manufactures instructions on how to configure the camera baud rate.

The X300 can support multiple PTZ cameras assuming that they are all the same protocol and baud rate. PTZ has its own addressing system. Set each required PTZ camera to YES and navigate down to the required camera number in order to enter the PTZ mode. PTZ mode will enable PTZ controls and functions using the Reviewer.

The main PTZ are functions are to move the camera Left, Right, Up, Down, Zoom in and Zoom out. There are advanced features for setting up focus behaviour and additionally the X300 can access the cameras internal menus (if the camera supports it). The X300 can also store 8 different user defined camera positions, for example preset position 1 could be a scene view overlooking a car park, preset position 2 could be zoomed in close to the entrance, preset position 3 could be pointed at the exit. The presets can be accessed by pressing the number keys on the Reviewer for quick panning to locations. The presets can also be triggered via ALARM INPUTS.

PTZ PATROL SETUP – configures the PTZ camera to switch between its PRESET positions (as defined by the user). This is similar to the main video switcher, but the X300 is instructing the PTZ camera to move to different positions / zoom level.

See REVIEWER section for PTZ key controls.

NB – Some PTZ cameras will self enumerate in terms of PTZ addressing, some require physically setting using dip-switches (see manufactures instructions for details). You must connect the camera to the same DVR channel number as the PTZ addressing. If not, the controls within PCLink and the Reviewer may be associated with different connected cameras. If you are connecting self addressing PTZ cameras, they should be connected consecutively starting on channel 1.

SMTP Email allows the X300 to send an email when an event occurs to a know email address. The message will contain text entered in the email SUBJECT and BODY as well as a snapshot image from a selected camera and the current GPS position.

The following events can trigger an email to be sent; ON POWER UP, AT DAILY TIME, on MOTION DETECTION, on ALARM. **NB** GPS position is not available if the email is set to send on power up.

There is a SEND NOW feature for testing.

SMTP Server settings must be setup in order to use this feature. These settings are specific to the email server that you are using, not anything that the X300/Timespace provides.

SERV - Your email server e.g. myemailserver.com or smtp.gmail.com
PORT - X300 supports sending email over port 25 (standard SMTP) or port 465 (SSL).
AUTH - Select whether or not to use authentication (recommended to use authentication).
USER - Enter your email account username.
PASS - Enter your email account password. **NB** password is shown in clear text on the X300 menu in order to ensure that it is entered correctly. It is not stored in any log files or accessible by anyone unless they have a Reviewer - consider password protecting the X300 menu system for additional security.

The X300 has a built-in web server that can serve live images to a browser.

PORT ENABLED - YES/NO enables or disables the web server.
PASSWORD ENABLED - YES/NO turns web page password protection on or off.
USERNAME - sets the web browser username to be used if password is enabled. Default is **tsweb01**.
PASSWORD - sets the web browser password to be used if password is enabled. Default is **TSWEB01**.

A single camera image can be displayed and refreshed at a rate of 2 images per second (bandwidth dependent).

Options exist on the webpage to turn the stream on/off, select the camera to be displayed, stop/start recording and scale the image (useful for different connection/bandwidth types).

ADVANCED

Contains advanced option that normally do not need to be edited after installation.

POWER STATE - Set if the X300 will RECORD AT POWER UP, DO NOT RECORD or USE LAST STATE. If use last state is selected the unit will record on power up if it was recording when power was disconnected. If it was not recording when power was disconnected, it will return to this state on power up. Default setting is RECORD AT POWER UP.

ENABLE RECORD BUTTON controls whether the record button on the front panel can be used to start and stop recording (enable/disable).

LIVE VIEW - if set to YES, live view of camera will be displayed even if the disk cartridge is removed. If set to NO and the cartridge is not present, the initialisation screen is shown.

SPLASH SCREEN controls the length of time an operator logo will be displayed. A .bmp file can be loaded / displayed on boot up. The .bmp must be in a specific format and copied onto the cartridge. See APPENDIX 2 – Splash Screen for further details.

HEALTH PAGE DISPLAY controls the length of time the unit health status will be displayed for on boot up. The health page includes a simple traffic light status and may include service/fail code conditions as well as the current recording state. The health page can also be activated via an alarm input.

FAIL QUOTA/DAY sets how many fail messages that must occur for any given day before the FAIL LED is lit. During normal operation it maybe acceptable to receive a certain number of fail events before action is required. Set as applicable.

VIEW SERVICE LOG displays any service messages that have been logged by the system. Messages can be scrolled through and reviewed. Details of date/time and service/fail codes are shown. Service messages can be cleared by pressing the right key and then again to confirm. Clearing the service log will clear the front panel service/fail LEDs.

The Service LED on the X300 Front Panel can be cleared by resetting the Service Log.

LOAD SYSTEM UPGRADE

LOAD SYSTEM UPGRADE loads a new X300 operating system from either an X300 hard disk cartridge or an SD card. A .XOS file should be copied onto a cartridge or SD card using a PC then inserted into the X300.

Three loading options are available;

LOAD WITH FACTORY SETTINGS - load the XOS software with Timespace factory defaults.
LOAD WITH CURRENT SETTINGS - load the XOS software but maintain the current settings.
LOAD WITH CARTRIDGE SETTINGS - load the XOS software with settings from the cartridge.

SAVE SYSTEM UPGRADE will write the current software and settings to the cartridge (current.xos). This file could then be used to replicate a setup onto another X300 using LOAD WITH CARTRIDGE SETTINGS… The current software and settings can be saved to either the HD (cartridge) or SD card.

CAUTION should be taken to ensure that power is not lost during an upgrade.

TIMESPACE REVIEWER

FUNCTION
The Reviewer is used to program the menu settings on the X300 and to review recordings on the installed Hard Disk Cartridge.

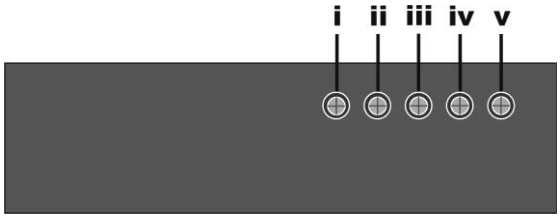
Connect data link cable (supplied with Reviewer) from "Reviewer" socket on the X300 front panel to the "Recorder" socket on the Reviewer. This connection provides power, video and audio from X300 to Reviewer.

When power (**Max** 12V ±1.2V) is applied to the X300 and fed to the reviewer the red LED on the bottom panel of the reviewer is illuminated.

The X300 display will be shown on the Reviewer monitor.

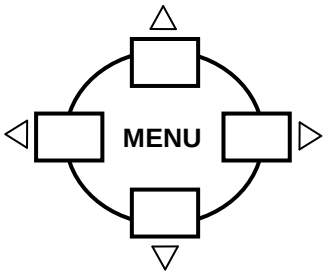
The X201 Reviewer has 5 picture adjustment pots situated at the bottom left-hand side of the reviewer. These should not need adjusting from the factory settings however if necessary, gentle turn using a small screwdriver.

i) NTSC Tint (colour balance when using an NTSC feed)
ii) Colour
iii) Brightness
iv) Contrast
v) Sharpness (image pixel sharpness/smoothness adjustment)



MENU NAVIGATION CONTROLS

The keys on the Reviewer can be grouped into Menu Navigation, Playback & Recording, Camera Switcher and Search & Help.



Press any of the 4 menu buttons to enter the main menu. Once in the menu system, their function is as follows:

△ Move arrow cursor to the previous item.

▽ Move arrow cursor to the next item.

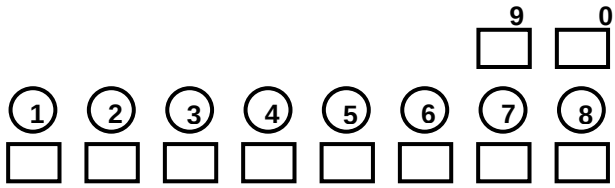
◁ If the arrow cursor is currently at a menu selection pressing the left button will cycle the value backwards

▷ If the arrow cursor is currently at a menu selection pressing the right button will cycle the value forwards

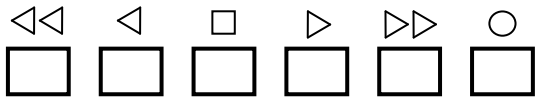
If the arrow cursor is currently at a sub-menu title pressing the right button will enter this sub-menu.

The **MENU EXIT** Key on the Reviewer will exit the current menu and move back up 1 level in the menu system when pressed. If already at the top level of the menu pressing this key will exit the menu system completely and return to the video switcher.

Once in the menu system the numbered keys are used for inputting data into fields which require a user entry such as times and dates.



PLAYBACK & RECORDING



◁◁ **Rewind** through recorded footage. Repeated presses increase the rewind speed in multiples of 1 second, up to a maximum of 20.

◁ **Reverse-play** through recordings.

□ **Stop** playback. If playback is already stopped, pressing this button again lights the LED above and the unit is in **Jog** mode, allowing image-by-image playback. Whilst in jog mode, the Rewind and Fast Forward buttons will skip to next/previous file.

▷ **Play** recorded footage.

▷▷ **Fast-forward** through recorded footage. Similarly to rewind, repeated presses of the fast forward enable rapid scan.

○ **Record** start or stop. If not currently recording (red LED off), pressing this button will begin recording from the end of the most recent footage. If the unit is currently recording (red LED on), this button will stop recording.

When pressing the control keys above, an **on-screen display** (OSD) will show each action. The OSD times out after 5 seconds. It will also display when switching between files, indicating which mode is being used. Modes displayed are;

- Play – normal play
- Replay – play backwards
- Stop
- Pause
- Jog
- Rewind
- Wind – fast forward

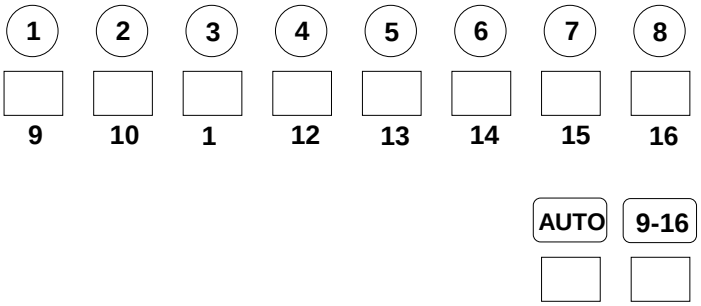
Text Input

The numbered keys have the following 4 characters attached to them, pressing the key repeatedly will cycle through the 4 available characters. The fifth character on each key is a blank space; use this to delete any unwanted characters.

Key	Number/Characters	
1	A B C 1	(blank)
2	D E F 2	(blank)
3	G H I 3	(blank)
4	J K L 4	(blank)
5	M N O 5	(blank)
6	P Q R 6	(blank)
7	S T U 7	(blank)
8	V W X 8	(blank)
9	Y Z 9	(blank)
0	0<>#,.*+@'	(blank)

Keep pressing keys 0 to 9 until the desired character appears. For example pressing key '1' gives the 'A' character, pressing again, the 'B' character, again the 'C' character, again the '1' character and finally a blank character. The sequence repeats. The camera text will appear above the time stamp on each image.

CAMERA SWITCHER

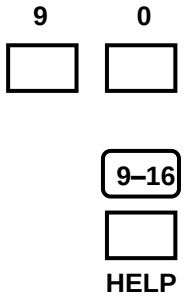


1-8 Switch the view to camera 1 to 8. When playing back recorded footage, pressing buttons 1 to 8 changes playback to that camera. If the AUTO LED is lit, buttons 1 to 8 change the live camera being viewed. This camera is held on the main monitor.

9-16 Press this button before pressing the number buttons 1-8 to access cameras 9-16 on the X300-16.

AUTO Activate the auto switcher mode. In this mode, the monitor will show a live view and the cameras are cycled as specified in the VIDEO OUTPUT menu. Press the AUTO button again to deactivate the auto switcher mode. If any of the buttons numbered 1-8 (or 9-16) are pressed while in auto switcher mode, the camera switching is stopped, and the selected camera view is held on screen. Control of the auto switcher does not affect any recording in progress.

SEARCH



SEARCH Go to a specific time and date in the recorded footage. Pressing this button will enter the PLAYBACK SEARCH screen. If the footage on a given camera cannot be found (it may not have been recorded), a "NO FOOTAGE FOR SELECTED CAMERA" message will be displayed.

TIME – Use the number keys to enter a time in 24hr format.
DATE – Use the number keys to enter a date in the format DD/MM/YY.
PLAY FROM SET TIME DATE – Plays the footage beginning from the time and date entered. If there is no footage at the time specified a jump is made to the nearest footage to the time given.

PLAY OLDEST – Plays the oldest available footage on the Hard Disk Cartridge.

PLAY NEWEST – Plays the most recent footage available on the Hard Disk Cartridge.

HELP – Applies when using any menu. Pressing this button will produce a help screen. Continue pressing any key to cycle through help screens until menu returns.

PTZ CONTROLS

REVIEWER KEY	PTZ FUNCTION
UP ARROW	TILT UP
DOWN ARROW	TILT DOWN
LEFT ARROW	PAN LEFT
RIGHT ARROW	PAN RIGHT
NUMERIC 1-8	PRESET 1-8 *camera support required
9	ZOOM OUT
0	ZOOM IN
9-16	When a PTZ camera is selected in Live View, the 9-16 button enables PTZ presets to be set. This is used in conjunction with the STOP button to setup PTZ presets.
STOP	There are 2 shifts states indicated by the STOP LED; OFF = shift not enabled ON = set preset / additional cmds

The following commands are only supported by the VISCA PTZ protocol;

REVIEWER KEY	PTZ FUNCTION	With shift enabled (STOP key)
<<	Focus Far	Iris Open
<	Focus Near	Iris Closed
>>	Auto Focus	Auto Iris

SETTING PTZ PRESETS

1. Press the camera number of the PTZ camera you wish to assign presets to.
2. Press the 9-16 button on the Reviewer (**9-16 LED ON**).
3. Move the camera to the desired position / zoom level.
4. Press the STOP key (the STOP LED will illuminate and remain ON for 10 seconds)
5. Press the number key you wish to assign that preset position to.

The using the arrows to move the camera position, the X300 uses a PROGRESSIVE SPEED control. If a directional arrow is held on the Reviewer, the camera will begin moving slowly, then speed up.

PTZ MODES

The following table describes the LED and Reviewer key press behaviour if certain PTZ / VIDEO OUTPUT options are setup on the DVR;

MODES	REVIEWER LEDs	BUTTON PRESS
SWITCHER	AUTO ON	To enter the DVR menu, press the MENU/EXIT or ARROW keys.
FREE ROAM (non PTZ camera)	AUTO OFF CAM# ON	Press numeric keys to select the desired camera. If a PTZ camera is selected then the ARROW and 0/9 buttons are now managed by PTZ. To enter the DVR menu, press the MENU/EXIT key.
FREE ROAM (PTZ camera)	AUTO OFF CAM# ON	ARROW and 0/9 buttons are now managed by PTZ. To enter the DVR menu, press the MENU/EXIT key. Note - If a PTZ DEFAULT AUTO CAMERA is set, this is a higher priority than the VIDEO SWITCHER on power up.
PTZ PATROL	AUTO FLASHING CAM# ON	To enter PTZ PATROL press the AUTO key (Live View switches automatically between the PTZ presets, for configured time). To stop PTZ PATROL press the numeric CAMERA number key. To enter the DVR menu, press the MENU/EXIT key.
PTZ PRESET (for manually switching between configured presets and setting up presets).	9-16 ON	Pressing numeric keys 1-8 will switch to the specified PRESET position (see above for SETTING PTZ PRESETS). ARROW and 0/9 buttons are now managed by PTZ. To enter the DVR menu, press the MENU/EXIT key *twice.*

NB – The SWITCHER password protection feature is not supported whilst in PTZ mode. This is due to PTZ owning the video output function. Disable the switcher password in the SETTINGS MENU > SYSTEM SETTINGS > PASSWORD menu by setting SWITCHER to **NO.**

USB INTERFACE KIT

The purchase of USB Kit T605-USB includes the necessary licence for use of PCLink Suite software including free of charge updates on a single PC (reasonable use policy allows installation on a secondary portable PC; laptop). Timespace Technology does not authorise the unlicensed usage of PCLink Suite software.

The USB Kit provides all hardware and software necessary to review and archive recordings on a PC from a Hard Disk Cartridge when it has been removed from the X300 Digital Recorder. No additional device drivers are required for the USB Interface Kit when using Windows 2000, XP, Vista or Windows7.

Kit Contents:

- 1x USB / IDE Interface Lead
- 1x PCLink200 Software CD

Connecting to a PC using the USB Interface Kit

1. Remove the Hard Disk Cartridge from the X300.
2. Plug the multi-pin D shaped IDE USB lead into the rear of the cartridge and then plug the smaller USB connector into an available USB port on the PC.

Once the disk has been connected, the PC should take a few seconds to detect the disk and Windows should automatically assign a drive letter to it. The drive should be viewable in Windows Explorer with .XBA files visible with their associated icon (assuming PCLink Suite is installed);

Recording files can now be viewed using PCLink200;

- Individual files can be opened directly from Windows Explorer by double clicking.
- Up to 15 files can be opened by selecting them and using RIGHT CLICK > OPEN WITH PCLINK200.
- .XBA files can be dragged from a Windows Explorer window and dropped onto the main area of the PCLink200 window.
- The entire cartridge can be loaded by opening PCLink200 and selecting the AUTOLOAD option.
- A specific folder can be loaded from within PCLink200; FILE menu, LOAD FOLDER.
- A specific file can be loaded from within PCLink200; FILE menu, LOAD FILE.

PCLINK SUITE

Timespace PCLink Suite consists of applications that allow Playback, Live View, Configuration and Download of recorded files from the X and K series range of digital video recorders.

Detailed instructions of each application within PCLink Suite can be found in the PCLink Suite manual, available on our website www.tspace.co.uk

Application overview;

PCLink200
- Review recorded footage via USB cable connected to removable cartridge.
- Review recorded footage over IP connection to the X300.
- Live view of cameras (multi channel support).
- Remote configuration of X300 menu settings.
- Download file remotely (separate FTP client can also be used to download files).

RemoteLink
- Review recorded footage over GSM / IP connection to the X200.
- Live view of cameras (single channel support).
- Remote configuration of X200 menu settings.

LANLink
- Automatic Health checking over IP connection.
- Automatic and scheduled downloading of footage.

XCommunicate - Download X200 files remotely (single file download support).

ImageLink - X300 can send a snapshot image to a PC using a connected GSM modem.

SafetyLink - Review G-Sensor events that have exceeded the configured threshold.

WARNINGS

- **THE USE OF HARD DISK CARTRIDGES OTHER THAN THOSE SUPPLIED BY TIMESPACE TECHNOLOGY WILL INVALIDATE THE WARRANTY OF THE X300 RECORDER AND WILL CONSTITUTE A BREACH OF THE X300 OPERATING SOFTWARE COPYRIGHT.**

- **THE PURCHASE OF USB KIT T605-USB INCLUDES THE NECESSARY LICENSE FOR USE OF PCLINK SUITE SOFTWARE ON ONE PC, INCLUDING FREE OF CHARGE UPDATES. REASONABLE USE ALLOWS A SECOND INSTALLATION ON A PORTABLE COMPUTER PROVIDED BOTH INSTALLATIONS ARE NOT USED SIMULTANEOUSLY. TIMESPACE TECHNOLOGY DOES NOT AUTHORISE THE UNLICENSED USAGE OF PCLINK SUITE SOFTWARE.**

- **THE X300 RECORDER MUST ALWAYS BE MOUNTED SO THAT THERE IS A FREE FLOW OF AIR AROUND IT. IF IT IS MOUNTED IN AN ENCLOSURE, IT IS ESSENTIAL THAT ADEQUATE VENTILATION IS PROVIDED, AND IT IS RECOMMENDED THAT A FAN IS INCORPORATED IN THE ENCLOSURE DESIGN.**

- **IF THE X300 RECORDER IS MOUNTED IN A VEHICLE, OR OTHERWISE SUBJECT TO VIBRATION, SUITABLE DAMPING MUST BE BUILT INTO THE MOUNTING.**

- **HARD DISK CARTRIDGES ARE SENSITIVE TO SHOCK, VIBRATION AND HUMIDITY AND MUST BE USED WITHIN OPERATING TEMPERATURE RANGE AS DETAILED IN THE X300 SPECIFICATION.**

- **IT IS HIGHLY RECOMMENDED THAT RECORDING IS STOPPED BEFORE POWER IS REMOVED FROM THE X300 TO AVOID LOSS OF DATA. IT IS ALSO RECOMMENDED TO STOP RECORDING BEFORE THE CARTRIDGE IS REMOVED.**

- **CARTRIDGES SHOULD BE SAFELY REMOVED FROM WINDOWS OPERATING SYSTEM ENVIRONMENT PRIOR TO REMOVING POWER/USB CABLE. DATA LOSS OR CORRUPTION MAY OCCUR IF THIS IS NOT FOLLOWED.**

- **DO NOT WET THE PRODUCT WHEN CLEANING.**

- **THIS PRODUCT CONTAINS A LITHIUM BATTERY. DO NOT RECHARGE, OPEN, HEAT OR DISPOSE OF IN FIRE. DISPOSE OF ACCORDING TO LOCAL REGULATIONS.**

- **X300 MAY BECOME UNUSABLE IF POWER TO THE UNIT IS LOST DURING A SOFTWARE UPGRADE.**

- **WHEN REVIEWER IS CONNECTED TO X300 THE POWER SUPPLIED TO THE X300 MUST BE 12V+/-1.2A.**

APPEXDIX 1 – Health SMS Message Format

If a parameter is not known or not to be included (i.e. set to NO on the menu), then the char '-' is used in the message. Three examples are shown below;

1,076812,BUS AO52 WXA,-,-,L,CNCC,064253 280509,120510 240509,S,212756120509,S,17,MODEM SEND ERROR

1,076812,BUS AO52 WXA,HUNTINGDON12,-,L,CNCC,064518 280509,120510 240509,-,064353 280509,S,63,LOG RESET

1,076812,BUS AO52 WXA,HUNTINGDON12,-,L,CNCC,064518 280509,120510 240509,-,-,-,-,-

FIELD	DESCRIPTION	VALUE
<1. type>	Reason health SMS has been sent	"0" - SMS POWER-UP. "1" - SMS SEND DAILY. "2" - SMS SEND NOW. "3" - SMS SEND NOW via incoming SMS.
<2.serial_num>	Unit serial number.	"Serial num" - The X300 6-digit serial number.
<3.veh_id>	Optional camera 1 text.	"Camera1 text" - Camera1 text, up to 12 chars. "NO ID" - No camera 1 text specified.
<4.veh_id1>	Optional filename text.	"Filename text" - Filename text, up to 12 chars. "NO ID1" - No camera 1 text specified.
<5.gps_pos>	Current or last GPS position.	"ddmmm.mmmmX dddmm.mmmmX" - GPS position "NO GPS DATA" - No GPS data available.
<6.last_curr>	Indication that GPS position is last known or current GPS position.	"C" - GPS posn specified in 5 is the current position. "L" - GPS posn specified in 5 is the last know position i.e. NOT current.
<7.cams_conn>	List of cameras connected.	"C" - Colour camera is connected. "B" - Black and white camera is connected. "N" - Camera is NOT connected (i.e. disconnected).
<8.curr_ts>	Snapshot of current timestamp.	"Current timestamp" - Timestamp.
<9.last_rec_file_ts>	Timestamp of last recorded file.	"Last file timestamp" - Timestamp. "NO RECORDINGS" - There are no recordings on disk.
<10.led_status>	Service/Fail/Record LED status.	"R" - Record LED is ON. "S" - Service LED is ON.
<11.log_ts>	Timestamp of the last log entry.	"Log timestamp" - timestamp. "" - May be blank if no log.
<12.log_mode>	Log entry mode.	"Mode text" - Mode text. "NO MODE" - No mode text available. "" - May be blank if no log.
<13.log_code>	Log entry code.	"Code text" - Mode text. "NO CODE" - No code text available. "" - May be blank if no log.
<14.log_desc>	Log entry description.	"Desc text" - description text. "NO LOG" - No logs available.

DETAILED DESCRIPTIONS

A description of the expected content for each heading in the message follows:

<1. type>
Description: The type of message or the reason the message has been sent (the fleet mgmt may wish to know if it is the daily message or one they have just requested).
Content:
"0" – SMS POWER-UP
"1" – SMS SEND DAILY
"2" – SMS SEND NOW
"3" – SMS SEND NOW (via incoming SMS).

<2.serial_num>
Description: The serial number of the X300 unit.
Content:
Serial num – The X300 6-digit serial number.
'–' – Not known or not available.

<3.veh_id>
Description: Camera 1 optional text (OTHER>CAMERA OPTIONS).
This is selected for inclusion in the message via the Health over SMS hidden menu.
Content:
Camera1 text – Camera1 text, up to 12 chars.
'–' – No optional camera 1 text specified or not included in the menu.

<4.veh_id1>
Description: Filename optional text (OTHER>FILE SYSTEM).
This is selected for inclusion in the message via the Health over SMS hidden menu.
Content:
Filename text – Filename text, up to 12 chars.
'–' – No optional filename text specified or not included in the menu.

<5.gps_pos>
Description: The current or last known GPS posn (specified as longitude then latitude in degrees and minutes).
Content:
"ddmmm.mmmmX dddmm.mmmmX" – GPS posn
'– ' – No GPS data available.

<6.last_curr>
Description: An indication if the GPS posn is the current posn or last known.
Content:
"C" – GPS posn specified in 5 is the current posn.
"L" – GPS posn specified in 5 is the last know posn (i.e. NOT current).

<7.cams_conn>
Description: Camera status.
Content:
"C" – Colour camera is connected.
"B" – Black and white camera is connected.
"N" – Camera is NOT connected (i.e. disconnected)

Cameras are listed as 1234 etc, e.g. CCBN is a 4 camera system, where cam1,2=colour, cam3=B&W, cam4 disconnected.
Camera systems are either 4 or 16.

<8.curr_ts>
Description: Current X300 system timestamp.
Format is “hhmmss ddmmyy” or “hhmmss mmddyy” depending on menu setting (OTHER>TIME AND DATE mode option).
Note that there are no separator characters in the time and date strings due to message size limitations.
Content:
Current timestamp - Timestamp.

<9.last_rec_file_ts>
Description: The timestamp of the last recorded file (i.e. newest file).
Format is “hhmmss ddmmyy” or “hhmmss mmddyy” depending on menu setting (OTHER>TIME AND DATE mode option).
Note that there are no separator characters in the time and date strings due to message size limitations.
Content:
Last file timestamp - Timestamp.
‘–‘ - There are no recordings on disk.

<10.led_status>
Description: X300 front panel LED status.
Contents:
“R” - Record LED is ON.
“S” - Service LED is ON.
“F” - Fail LED is ON.
‘–‘ - No LEDs are on (with exception of the power LED).

The information under the remaining headings pertains to the last service or fail log (newest log).
If the Service and/or Fail LED are reported as ON under the previous heading, then the last service or fail log information is included in the message.

If no service or fail logs are available (e.g. if a service log reset has been performed), then no log information will be available.

<11.log_ts>
Description: The timestamp of the last service log.
Format is “hhmmss ddmmyy” or “hhmmss mmddyy” depending on menu setting (OTHER>TIME AND DATE mode option).
Note that there are no separator characters in the time and date strings due to message size limitations.
Contents:
Log timestamp – timestamp
“–” – May be blank if no log.

<12.log_mode>
Description: Service log mode, e.g. Service, Failure.
Contents:
Mode text – Mode text.
“–” – No mode available or no log available.

<13.log_code>
Description: Service log code relating to mode.
Contents:
Code text – Mode text.
“–” – No code available or no log available

<14.log_desc>
Description: Reason for service log.
Note: Due to message length constraints, this information may be partial or missing.
Desc text – Log description text.
“–” – No logs available.

SPECIAL NOTES

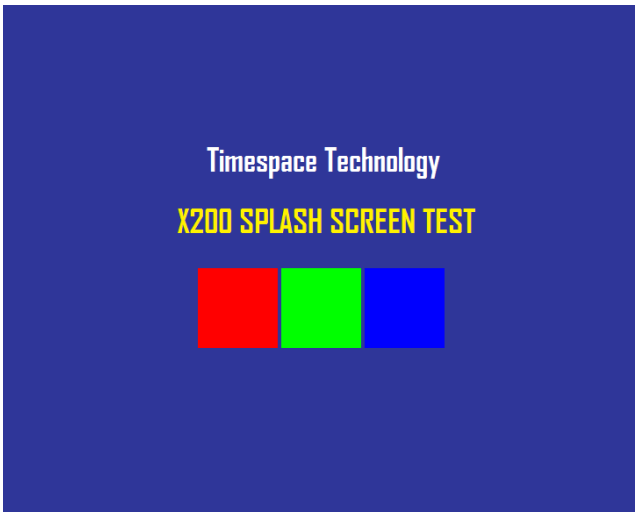
The timestamp format is either “hhmmss ddmmyy” or “hhmmss mmddyy” depending on the mode setting on the unit. Note the lack of ‘:’ and ‘/’ separators (the default setting is to include the separators).

If the message is too big for a single SMS, then the message is cut short starting with the Service Log entry description (i.e. the last entry). The service log info must be appended to the end as it is the only variable that has a changing length (with the exception of veh_id, veh_id1). All other variables (when available) are a fixed length. If they are not available (e.g. NO GPS DATA), then the info string is usually less chars than the real data, with the exception of NO LEDS for led_status.

APPEXDIX 2 – Splash Screen

SPLASH SCREEN – Enable’s use of a .BMP file to be displayed, for example an Operator/Company logo. Can be set to 5, 10, 20, 30, 60 seconds, or Until Exit (which requires user interaction to clear).

A tool can be provided on request to create the Splash Screen image in the correct format, from an input source. The input source should not be more than 1.5mb and should be a simple image with plain colours, approx 720x576. An example images is show below;



Once in the correct format (using the Timespace conversion tool), the image is placed on the X300 cartridge, named; Splash.ext. Once configured in the menu, the Splash Screen will be read from the disk and displayed.

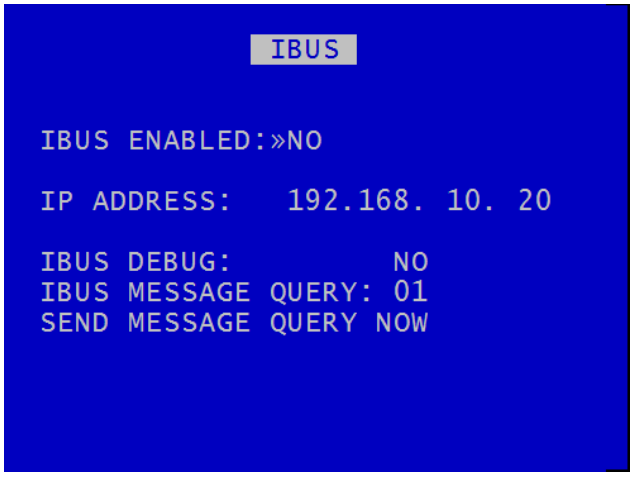
Please contact support@tspace.co.uk for the conversion tool.

APPEXDIX 3 – Transport for London IBUS diagnostic interface

Timespace has developed a diagnostic interface in conjunction with Transport for London (TFL) to monitor the status, performance and health of Timespace X200, X300 and V400 digital video recorders on London Buses.

Data strings are passed between the DVR and the IBUS system every 5 mins. In addition to the scheduled data packets, the DVR can be queried by sending it a proprietary text string. Several different data sets can be retrieved according to the input string.

The IBUS feature is available in software **X200 V1.9.0** onwards, **X300 V1.1** onwards and **V400 V1.0** onwards. The IBUS menu is accessed using the short code; **9001234** on the X200 and X300 and via the menu system on the V400. The short code can be entered from any menu using the number keys on the Reviewer.



IBUS ENABLED - The IBUS interface can be enabled/disabled by setting YES/NO accordingly.
IP ADDRESS – Sets the IP address of the receiving device (default IBUS IP as above).
IBUS DEBUG - For testing purposes a debug mode can be enabled. This will increase the rate of messages sent out from the DVR to every 5 seconds. It is not recommended to leave debug turned on during normal operation.
IBUS MESSAGE QUERY – sets the type of test message that will be sent out when selecting the SEND MESSAGE QUERY NOW function.

The IBUS information can also be accessed using the RS232 command #IBUS. This command is only supported on the X300 & V400 over the serial port, no Telnet support.

Example setup of the IBUS interface on an **X200** DVR includes;
- Set recording parameters as required.
- Enter IBUS short code and set ENABLED to YES
- Navigate to the ALARM OUTPUT when… menu and set CAMERA DISCONNECTED to YES.
- Navigate to the LAN menu and set the IP ADDRESS to 192.168.10.30 and the GATEWAY to 192.168.10.20

Example setup of the IBUS interface on an **X300** DVR includes;
- Set recording parameters as required.
- Enter IBUS short code and set ENABLED to YES
- Navigate to the LAN menu and set the IP ADDRESS to 192.168.10.30 and the GATEWAY to 192.168.10.20

Example setup of the IBUS interface on a **V400** DVR includes;
- Set recording parameters as required.
- Enter IBUS menu and set ENABLED to YES
- Navigate to the LAN menu and set the IP ADDRESS to 192.168.10.30 and the GATEWAY to 192.168.10.20

It is advised to set the correct date and time when enabling the IBUS feature and ensure no Service/Fail conditions are currently being displayed. **NB** currently the X200, X300 and V400 connect to the IBUS system's network port 4. In the case of the V400, LAN socket 1 is currently used for the IBUS interface.